

# **Understanding Economic Regulation of Infrastructures and Utilities in Europe: The Case of Electricity in Comparative Perspective**

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First Draft – Comments Most Welcome!

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## **Regulation in Europe**

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## **Understanding Economic Regulation of Infrastructures and Utilities in Europe: The Case of Electricity in Comparative Perspective<sup>1</sup>**

Looking back on the transformation of the political economy of Europe over the 1980s and 1990s, most observers would agree to single out the advance of the market principle as the most significant development. The creation of markets concerned both the internal fabric of public institutions and the external boundaries separating the public and the private sphere. As far as the latter dimension is concerned, the privatization of public enterprises and the liberalization of markets proved to be the most prominent strategies of market-oriented reforms. A couple of well-researched factors converged to induce and accelerate privatization and liberalization: the economic and fiscal crisis of the welfare state, the predominance of neoliberal economic thinking, the dynamics of technological developments, the rise in international competition pressures, and, last but not least, European market integration (e.g. Wright 1994).

The general move towards privatization, liberalization and deregulation has not exempted a field which even Adam Smith, some two hundred years ago, considered not amenable to the market logic: infrastructures and public utilities which, traditionally, belong to the core of public responsibilities and have been state-owned or run as publicly licensed monopolies (Smith 1952: 300). These days, especially in Europe, "utilities' privatization has become a booming industry" (Spiller 1995: 63).

However, the powerful movement of privatization and liberalization has not resulted in a simple retreat of the state in European economies (for example Grande 1994). Not only in the sensitive field of infrastructures and utilities do observers find that governments, at different levels, are re-regulating privatized enterprises and liberalized markets. The most prominent explanation for the paradox of "privatization and deregulation" was provided by Giandomenico Majone who identified a paradigm shift from the "positive" or interventionist state to the regulatory state, following the US-American example (Majone 1994a, 1994b, 1996, 1997; Seidman/ Gilmour 1986; Grande 1997). This shift has both a functional and a territorial dimension. Functionally, the post-

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<sup>1</sup> This paper emerges from my collaboration in a comparative empirical research project funded by the German Science Foundation (DFG) and directed by Professor Edgar Grande at the Technical University of Munich. The research project, titled "Regulation and Infrastructures in Europe", seeks to analyse the institutional architecture and workings of the regulatory state in the European multi-level system. The focus is on specific institutional arrangements found in different infrastructure sectors across EU member countries. I wish to thank Edgar Grande for his invaluable support.

Keynesian state adopts a different role in economic governance: from a role as producer of goods and services to that of a regulator of market processes. Territorially, the regulatory function is being promoted by the transfer of policy-making power to the EU, which largely operates as a regulatory state, and by EU influence on national policy-making.

While public regulation of business activities, as traditionally practised in the U.S., has certainly gained in importance as a new form of economic management in Europe, the focus on broad trends of development, like the 'rise of the regulatory state', should not divert attention from specific variations of public regulation in the complex institutional environment of the EU multi-level system. Therefore, this paper seeks to go beyond common features of public regulation and to shed some light on the institutional complexity and variation of 'the' regulatory state in Europe (also see Eberlein 1998, 1999). The paper will consider the economic regulation of infrastructures and utilities as an example, focusing more specifically on the case of electricity regulation across EU member states.

The paper is organized as follows. In a first, theoretical part, I will unpack the logic and concept of reregulation, arguing that the normative model of efficiency-oriented, expertise-based regulation is an insufficient guide to the positive politics of the regulatory process. While positive economic models and theories of regulation are helpful in identifying some general features and problems, they fail to capture the complex institutional context and variety of the regulatory process. More sophisticated, political-institutionalist accounts are required. These can avoid the opposite danger of a-theoretical description by making use of 'configurational analysis' based on comparative empirical research.

In a second, empirical part, I will illustrate the potential of a political-institutionalist approach by presenting the case of electricity regulation in Europe. Drawing on this case study, I will first, and mainly, map the different dimensions of regulatory variation in the EU multi-level framework. Second, and more briefly, I will try to identify configurational patterns of variables fit to explain the variety of regulatory regimes.

## **(A) Unpacking (Re-)Regulation**

In retrospect, privatization and liberalization did not result in the simple retreat of the state, but rather in a redefinition of its role (Müller/ Wright 1994). Steven Vogel (1996) found that, across advanced industrial countries, "freer markets" were re-regulated by "more rules", as a result of market-oriented reforms. In Britain, for example, radical privatization policies were followed by the establishment of a variety of regulatory agencies (e.g. Graham/ Prosser 1991; Thatcher 1998). Why then do governments choose to reregulate privatized enterprises and liberalized markets? The apparent paradox can be resolved by taking a closer look at the rationales for regulation. I suggest a distinction between two different logics of regulation. First, regulation is supposed to correct market failures which persist in the aftermath of privatization and liberalization. Either regulation seeks to substitute for or mimic the efficiency effects of competition or, if possible, it tries to create and protect competitive markets (economic logic of market-making). Second, regulation is also used to promote social and political goals typically not served by competitive markets, notably by correcting or compensating for the undesirable results of economic efficiency (political logic of market-correction). More generally, regulation inevitably serves as a political arena for the distribution of costs and benefits, wherein competing interests and actors are mobilized. In practice, both logics co-exist and may conflict. I will start with the normative perspective of regulation, rooted in welfare economics.

### ***1. The Normative Perspective: Economic Efficiency***

Normative theories of regulation focus on market failure as justification for public intervention (Noll 1989). Infrastructures and utilities have traditionally been considered 'natural monopolies', one important instance in which markets fail to be the most efficient form of allocation (Berg/ Tschirhart 1988). Natural monopoly is found under two conditions. First, important economies of scale and scope make provision by a single firm more efficient than by several firms. Second, the market is not 'contestable', i.e. a large share of sunk costs, i.e. non-redeployable investments in specific assets such as physical networks (e.g. an electricity grid), work as an effective barrier for market entry and exit of potential competitors (Baumol et al. 1982).

It is important to understand that a change in the control over property rights from public to private (privatization) and the relaxation of market entry restrictions (liberalization), do not, per se, eliminate certain market failures and remove the need for public intervention. To be sure, natural monopolies might be eroded due to technological progress (e.g. telecommunications) or substitutive competition (road competing with rail transport). And market-oriented reforms may, by way of vertical disintegration, separate the management of the 'non-contestable', physical network, to which natural monopoly is restricted, from the operation of services which can be opened to competition. But as long as natural network monopolies persist, there is a need for public control so that the monopolist does not abuse its market power. The need for public control still applies to many network-based infrastructures and utilities, such as electricity supply, regardless of the legal opening of markets and the privatization of public monopolists.

In short: provided market failures persist, the normative choice is not between public ownership and the free market, but between different forms or regimes of public intervention.<sup>2</sup> Speaking in ideal-types, one could contrast public ownership on the one hand with public regulation of private service delivery on the other hand. The former regime was, until recent market-oriented reforms, characteristic of many infrastructures and utilities in European economies, while the U.S. provide the main example for the latter solution, i.e. public regulation of private service delivery.

Public regulation in the American understanding of the term is a distinct form of government control over private business activity (Kahn 1971; Breyer 1982; Noll 1989; Selznick 1985). Rules prescribed in the public interest constrain certain kinds of private (economic) decisions. Quasi-judicial procedures, involving expertise-based fact-finding, rule-making, and adjudication are used to develop and implement these rules (Noll 1985: 9-10). Regulation requires more than the passing of a law (e.g. competition law). It can be defined as a form of external market control which is exercised on a continuous, case-by-case basis by a governmental agency or commission.

European-style public ownership was criticized for being used to serve an incoherent variety of social and political goals and corporate producer interests, to the detriment of economic efficiency and consumer sovereignty. It was the perceived lack of concern with efficiency and the

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<sup>2</sup> This is, of course, under the condition that the costs of regulation or 'regulatory failure' do not outweigh the benefits of public intervention, as compared to the market failure situation of non-intervention.

poor performance of nationalized or monopolized industries which helped to push the privatization agenda.

Some observers expect the shift from public ownership to public regulation to give more weight to independent regulators, experts and judges, at the expense of the producer-dominated coalition of politicians, public managers and trade unions which controlled decision-making under public ownership (Majone 1997: 149). The idea is that by creating independent, expertise-driven regulatory agencies and commissions, it will be possible to protect some issues from the short-termism and political expediency of majoritarian democracy and to achieve credible policy commitments.

In order for regulation to perform better than public ownership, however, regulation is supposed to follow the economic efficiency rationale, keeping clear of social or political goals such as redistribution, which should be left to political decision-making outside the expertise-based regulatory process. The call to bind independent regulators to an exclusive concern for micro-economic efficiency is supported by a powerful argument from democratic theory. Building on the distinction between (Pareto-optimal) efficiency and redistribution, Majone states that "(...), in a democracy redistributive policies and institutions can only be legitimated through direct political accountability, while efficiency oriented policies and institutions are basically legitimated by the results they achieve" (Majone 1994c: 23). Thus, efficiency issues can and should be dealt with by independent expert regulators.

Furthermore, the argument is that even delegation to independent agencies, whose decisions have de facto (redistributive) 'wealth effects', need not create an insurperable legitimacy problem. Instead of (re-)politicizing regulatory decision-making, it is considered possible to increase legitimacy by way of careful institutional design (notably by procedural safeguards such as reasoning requirements), so that expert regulators, while remaining independent, are held accountable to their political principals. The design of an effective structure of accountability "will go a long way towards ensuring that independence and accountability are indeed complementary and mutually supporting, rather than antithetical, values" (Majone 1999: 14).

But is the normative model of exclusively efficiency-oriented or procedurally accountable regulation a good guide to the reality of the regulatory process? To answer this question, we need to shift our focus from the normative perspective to positive accounts and theories of regulation.

## ***2. The Positive Perspective: The Politics of the Regulatory Process***

Positive accounts of regulation basically tell us that, in practice, public regulation is not just about the correction of market failure and economic efficiency. Rather - and this is what I called the second logic of regulation above - regulation, not unlike public ownership or any other mode of public intervention into market processes, also serves a variety of social and political goals, which may conflict with efficiency concerns.

This is not to say that the shift from one mode of governance (public ownership) to another mode (public regulation) does not matter. There is indeed reason to assume that an increase in regulatory activities will result in some structural shifts in political organization and conflict resolution. To mention but the most important ones: the judicialization of decision-making (more detailed rules, conflict resolution by courts); the formalization and pluralization of the relations between state agencies and interest groups (formal procedures of access and participation, more single-issue groups); and, more generally, a higher degree of uncertainty, transparency and conflict in decision-making (Majone 1997; van Waarden 1998). And there is actually some evidence from the British experience that the shift to regulation favours a more conflictual and open policy style (e.g. Thatcher 1998).

To be sure, the transition from public ownership to the alternative regime of public regulation may make the conflict between competing values (efficiency vs. redistribution or equity) and interests (consumers vs. producers) more transparent and may give more weight to efficiency concerns than was given under the public ownership regime - which is what market reforms were about. The British case, however, also shows that it does not remove or resolve this conflict altogether. Nor can expert regulators be safely isolated from the distributive political conflicts. Looking back on a decade of utility regulation in Britain, Tony Prosser insists that "across utility regulation it has proved impossible to separate economic approaches to regulation from the broader political and social framework. (...) Finally, it has proved impossible to avoid the intrusion, as some would see it, of social concerns in regulation" (Prosser 1999: 198). He concludes that "utility regulators thus have a variety of different tasks which cannot be reduced to any single logic, economic or otherwise" (199).

The analytical background to this kind of evidence is provided by positive theories of regulation which were mostly developed on the basis of the long-standing US-American experience of regulation. I will start with the economic perspective.

Economic theories of regulation focus on the distribution of costs and benefits and the bilateral relationship between the regulator and the regulated firm (Noll 1989). Roughly speaking, there are two different strands of economic approaches to regulation, both of which operate within a public choice framework.

The most familiar approach is capture theory, which, in contradiction to normative public-interest assumptions, holds that regulation serves distinct private interests rather than public ones. Regulatory agencies are found to be captured by the very economic interests they are supposed to regulate. Stigler (1971: 3) provided the most prominent statement of capture-theory: "As a rule, regulation is acquired by the industry and is designed and operated primarily for its benefit." Regulation is a good demanded by industry for its own protection. Peltzman (1976) later generalized and extended the notion of regulation as a market where government officials sell regulation and firms buy it.

Capture theories were helpful insofar as they directed attention to the political and interest dimension of regulation, the powerful position of producer interests, and to the general danger of 'regulatory failure'. However, the prediction that a priori interests of regulators and the regulated firm will necessarily lead to the one and only result of capture by industry, is a bold oversimplification, and has not been confirmed in empirical testing. In the U.S. context, capture theory failed to explain much of the booming social regulation of the 1970s which could hardly be shown to be in the interest of business (Wilson 1984). Nor was capture theory able to account for the success of the deregulatory agenda in various industries (airlines, telecommunication) at the end of the 1970s (Derthick/ Quirk 1985).

Capture theory was also questioned by studies conducted within the framework of institutional economics, which focuses on the origin, choice and effectiveness of institutional arrangements and provides a more sophisticated angle on regulation. This framework adopts from capture theory the positive observation that regulation has distributive consequences, conferring costs and benefits, and, therefore, generates incentives for opportunistic behaviour and political action by



interested parties. This positive recognition leads to the normative challenge of "designing a regulatory system that responds to political pressures yet promotes efficiency" (Baron 1995: 27).

The principal-agent framework addresses the problem of effective control raised by capture-theory (e.g. Weingast 1984; Shepsle/Weingast 1987). Regulation can be interpreted as a double principal-agent set-up. First, the regulatory agency needs to be checked on by and held accountable to the political principal, through the use of efficient institutions which provide the agent with the appropriate incentives and sanctions so as not to 'shirk' its duty. This rejoins Majone's argument about how to deal with the normative problem of democratic legitimacy. Some studies conducted in the context of the US regulatory state actually seem to provide some positive evidence that regulatory agencies can be effectively controlled by their political principals (e.g. Weingast/ Moran 1982). Second, the relationship between the regulatory agency and the regulated firm can be considered as a problem of control within a principal-agent framework. Again, the focus is on efficient institutions which, in this case, should be able to prevent agency capture by the regulated industry.

A second approach within institutional economics is more concerned with the reverse problem of governmental capture (or expropriation) by regulation. Its focus is on the protection of property rights of business investors, viewing regulation as a bilateral contract between the regulator and the regulated firm (e.g. Levy/ Spiller 1996; Troesken 1996). Infrastructures and utilities are indispensable support systems vital to the entire community. Thus, they raise a variety of social and political issues. For this reason, governments will be constantly tempted to intervene on political grounds and to put aside earlier commitments (incomplete contracting). Private investors will only be willing to make long-term, asset-specific investments, if the regulatory discretion of governments is effectively restrained by strong institutional rules, which offer, for example, constitutional protection against short-term political interventions. In this perspective, social and political concerns, not laid down in the initial regulatory contract, are downgraded to potential threats to the property rights of investors.

### ***3. The Limits of Economic Models and the Need for Political-Institutionalist Explanations***

Economic theories of regulation are useful insofar as they point to some general regulatory problems and challenges. The main problem is effective control of both the regulated firm and the regulatory agency. The main challenge is the design of efficient institutions to cope with the political pressures induced by the distributive effects of regulation. There has been considerable progress in institutional economics towards more sophisticated models of the regulatory process, which try to incorporate complex institutional features and to deal with associated problems of incomplete information, the interaction dynamics of regulation, unforeseen contingencies, organizational complexity of regulation or multi-period or multi-principal set-ups of regulation (for an overview see Baron 1995).

However, formal economic models of political control still tend to operate within a narrow framework of individualistic, dyadic relationships between unitary actors. This perspective runs the danger of inviting flawed ex-post rationalizations of policy outcomes which are 'shown' to result from some 'efficient' incentives and control patterns (see the critique by Eisner et al. 1996). Likewise, the public choice paradigm of utility maximization, by stretching the concept of utility, can be easily misused to rationalize, ex post, any regulatory outcome as the political equilibrium resulting from the interaction of utility-maximizing actors.

Formal agency models as well as more general public choice frameworks do not pay sufficient attention to the complex institutional web which shapes the regulatory process. An exclusive focus, for example, on the bilateral regulatory contract between the regulator and the regulated firm misses both the internal organizational complexity of both parties and the external institutional and political context shaping the interaction of contract parties.

Empirical studies of the U.S. regulatory process stress the variety of actors and factors impacting regulatory policy-making: agency staff, presidents, congressional committees, courts, plus the general economic and political context (for example Moe 1985). More generally, regulatory politics does not escape the dynamics of the general political environment. Changes in interest group politics, such as a greater variety and diversity of politically effective groups, will, for example,

affect the character of the regulatory process (Eisner 1993; Reagan 1987). Political science writings on the politics of regulation have identified some important political-institutional factors shaping the regulatory process. Wilson (1980) drew attention to the role of policy entrepreneurs in the open U.S. political system, who help to overcome collective action problems of diffuse consumer interests and can, thus, defeat producer interests. This is how social regulation directed against producer interest could be explained. Derthick/ Quirk (1985), aiming to explain why pro-competitive economic deregulation happened in the U.S. at the beginning of the 1980s, pointed to the power of ideas. Elite opinion converged in support of neoliberal reform and leading office-holders took initiatives.

Compared to formal modelling, these kinds of accounts give a much more realistic picture of the politics of the regulatory process. However, comprehensive reconstructions of the regulatory process run the opposite danger of "ending up with a sort of a-theoretical pluralism" (Prösser 1999: 205), with hardly any predictive and explanatory power. While it is necessary to be aware of the multitude of factors, actors and interests impacting the regulatory process, it remains essential to be able to show which specific factors do explain a given regulatory outcome, and which factors do not; and while it is important to identify the entire range of parties affected by or concerned with the distributive effects of regulation, a useful approach should be able to tell us which of these stakeholders really matter and prevail, and why. In order to arrive at valid explanations of regulation, the different interests and strategies of politicians, regulators, and affected parties or interest groups need to be systematically linked to relevant societal and institutional constraints, as well as to the 'corridor' of available policy frames or repertoires (see the approach proposed by Snyder 1999: 178-179). Otherwise, the danger is to end up with descriptive or idiographic, ad-hoc accounts.

Neo-institutional writings provide some guidance to the kind of institutional factors with explanatory power in the analysis of economic policy and governance across advanced industrial countries (e.g. Hall 1986; Scharpf 1991; Steinmo 1993; Wilks/ Wright 1987). The most prominent institutional factors identified and tested in comparative research are: the structure and organization of decision-making and conflict resolution; the voting and party system; the organization of societal interests; and state traditions and normative policy concepts. The EU context intro-

duces additional institutional variables to take into account, notably the multilevel character of decision-making and the high degree of interlacing of levels, institutions and policies (e.g. Marks et al. 1996).

Comparative empirical analysis provides the necessary grounding to political-institutionalist explanations of regulatory policy-making. Differences in regulatory processes and outcomes can only be observed and explained within a comparative framework. Obviously, this kind of enterprise is confronted with the familiar problem of "too few cases, too many variables". One way to deal with this problem is to focus on a few, structured patterns or configurations of variables, rather than on a multitude of single variables. This is more than just creating 'compound variables'. The basic idea of configurational analysis is that, while specific outcomes might only be explained by a specific (potentially unique) combination of variables, it is possible to relate observed variation in specific cases to some generally applicable rules or logics, so that there is no need to resort to ad-hoc accounts (Verba 1967; Lehmbruch et al. 1988). This kind of method seems particularly appropriate in a context characterized by highly complex interactions of variables and multiple causal pathways. Also, it allows for the detection and integration of additional variables which were not recognized as important at the outset of a study.

Sophisticated comparative analysis recognizes that most social phenomena are not produced by a single cause but by specific combinations of causal variables. Furthermore, not only can specific constellations of variables produce different outcomes under different context conditions, but also different constellations may produce the same outcomes (Ragin 1987). In sum, careful configurational analysis of *variable interaction* is required to arrive at valid explanations.

In the second part of this paper, I will show how a political-institutionalist perspective can inform the empirical analysis of economic regulation in the EU multi-level system. I do not claim to execute a full-blown configurational analysis. Rather, the idea is to prepare the ground for such an exercise. My modest intent is the following: first, to map out and present the different analytical dimensions of regulatory variation which deserve attention and require explanation. This will be the main contribution. My second intent is to tentatively identify three configurational patterns of variables which seem fit to explain the variation found. I will use the electricity case in order to illustrate my argument, rather than to test causal propositions.

## **(B) Analysing Electricity Regulation in Europe: The Variety of Regulatory Regimes**

A closer look at the rise of 'the' regulatory state in Europe reveals that public regulation as a new form of economic management comes in different shapes and sizes. The first dimension of variation, which is well established in the literature on economic governance (e.g. Campbell et al. 1991; Hollingsworth et al. 1994), is the sectoral one.

### ***1. Prologue: Sectoral Variation in Infrastructures***

Infrastructures and utilities share certain common features as essential support systems or inputs for modern life and industry (s. for example the definition suggested by Denkhaus/ Schneider 1997). The main function of modern technical infrastructures is to satisfy the needs for mobility, communication, and transport of modern economies (Mayntz/ Hughes 1988). They cover the three fields of communication, transport, and public utilities. In this context, network-based industries play a particularly important role. They are capital intensive, asset-specific industries with a high degree of technical-systemic complexity and integration, offering important economies of scale and scope.

Nonwithstanding some common features, there are also important sectoral differences within the field of infrastructures and utilities, differences which are highlighted by recent market-oriented reforms. With respect to the regulatory challenge in the aftermath of privatization and liberalization, two dimensions are of particular importance. First, the speed and scope of technological change deserves particular attention. In the well-researched case of telecommunications, for example (Grande 1994), technological change has been rapid and far-reaching, opening new avenues for substitutive competition. The rise of alternative networks for communication (mobile, internet, etc.) has contributed to the erosion of the natural monopoly characteristic of fixed telephone networks. In other network industries such as gas and water, or railway transport, by contrast, technological change has been much more modest, and the pressure on established sectoral characteristics is much lower. Second, and often related to technological changes, the degree of competition in a sector will affect the regulatory challenge. Again, the international market dynamics of the telecommunications industry can be contrasted with other infrastructure sectors (e.g. railways), which remain characterized by de facto monopolies operating in largely insulated

national markets. These two variables carry the potential to significantly alter the parameters of public regulation. Take the typical regulatory problem of information asymmetry between the regulator and the regulated firm as an example: if there are viable competitors to challenge the former monopolist and incumbent, the regulator disposes of alternative sources of information and can more easily check on the incumbent's behaviour.

Keeping these sectoral variations in mind, I will now focus on the single case of electricity, which, so far, has received much less attention than telecommunications. The focus on just one sector will help to concentrate more specifically on dimensions of regulatory variation across territorial units of political authority.

## ***2. Introducing the Electricity Case: The Regulatory Challenge***

Electricity, like other public utilities (gas, water), has some specific technical features which distinguish it from other commodities, but also from other energy products: on top of the features typical for all utility systems (long-lived specific assets, dependence on integrated networks, i.e. the grid, and high coordination requirements,) the two elements of fluctuating demand and non-storability combine to create the peak load problem, that is the costly need to have sufficient capacity to equal or exceed load at all times. Given the non-substitutable nature of electricity, security of supply has traditionally been of prime importance. More recently, the effect of electricity generation and distribution on the environment has also developed into a major concern. Against this background, the entire power sector has traditionally been considered a natural monopoly, requiring vertical system integration, the exclusion of competition and sustained state intervention.

The 1980s and 1990s have brought a world-wide, fundamental transformation of the power sector, with some Latin American (Chile, Argentina) and Anglo-American countries (New Zealand, Australia, Britain, U.S.A.) taking the lead (Gilbert/ Kahn 1996; Yajima 1997; OECD 1997; ICC 1998). The overriding goal is to increase efficiency and drive down costs by introducing competition. Like in other network-based industries, the basic idea is to separate the unavoidable, non-contestable remnant of natural monopoly, i.e. the transmission and distribution wires as well as the grid management (dispatch and real-time balancing), from generation and from supply (con-

tracting for and selling to the customer). Apart from the neoliberal agenda of liberalization and deregulation (which denounced inefficiency and excessive electricity prices), the movement to disintegrate the power sector and open up generation and supply to competition was also driven by some economic and technological developments (OECD 1997: 162-164). Already in the 1970s, changes in the costs of nuclear and coal-fired generation, the experience that independent power producers could operate without affecting the stability of an integrated grid, and the discovery that the minimum efficient scale of generation might be much smaller (questioning the assumption of economies of scale, and thus, of natural monopoly) combined to prepare market-oriented reforms. More recently and importantly, the development of the combined cycle gas turbine (CCGT) considerably reduced the minimum efficient scale in generation and facilitated the decentralisation of generation, making smaller plants a viable option. Furthermore, advances in information technology reduced the costs of sophisticated metering and grid control equipment. This facilitated decentralization of supply, while making system coordination easier.

In Europe, the agenda of market-oriented reforms met with a quite heterogeneous landscape of national electricity management systems (McGowan 1996). The national power sectors differ with respect to a variety of factors: the mix of primary energy inputs into generation (coal, hydro, nuclear); the ratio of import dependence; ownership structure and the scope of monopoly rights; the extent to which the power sector was made to serve concerns of other sectors (environmental, industrial or employment policies) or larger political goals (national independence, military security, etc.). These differences resulted, for example, in substantiable variations in the costs of electricity to the customer. Speaking in ideal-types, one could distinguish, prior to market reforms, two different groups of national electricity systems: the vertically integrated national monopolies (e.g. Britain and France), and the decentralized and fragmented systems (e.g. Germany), in which there is a complex mix of public and private ownership on different territorial levels (Cross 1996; Midttun 1997).

Against this background of national heterogeneity, the efforts of the European Commission to liberalize the network-based energy sector (electricity and gas), as part of the internal market program, encountered much more difficulties than in the case of telecommunications (Schmidt 1998; Eising 1998). A long and winding policy process, set in motion with the 1988 Commission report on the "The internal market for energy", ended in a political compromise only in 1996. The

Community directive 96/92/EC, adopted in December 1996, prescribes only an incremental and moderate opening of markets to competition. In a first step, which took effect on February 19 this year, the equivalent of the national share of large users (consumption exceeding 40 GWh/year), which corresponds to 26% of national electricity demand, was opened to competition. As from February 19, 2000, the threshold will go down to consumers using more than 20 GWh/year (28% of national demand), and further down to those using 9 GWh/year in 2003, which will open 33% of the market to competition. New generation capacity is open to competition without delay.

Many member states are moving faster than required by the EU directive (Klom 1997). Radical privatization of the British electricity industry started as early as 1989 and resulted in complete liberalization of markets. The Nordic countries also took the lead. Finland and Sweden started market opening in 1995 and 1996 respectively, following the 1991 Norwegian example. The big German market was completely liberalized in April 1998. The laggards are Belgium, Greece and Ireland, which gained exemption from the EU 1999 market opening for one or two more years. While it is estimated that almost two thirds of all European consumers are now able to choose their electricity supply freely, the overall picture is that of a differential process of liberalization.<sup>3</sup>

For competition to work in practice, the owners and operators of the electricity networks, which remain natural monopolies, need to provide access to their lines to competitors, so as to enable transport of electricity from producers to costumers. The transmission networks are usually owned by vertically integrated electricity companies, which not only transport but also generate and sell electricity. Such companies will be tempted, when granting access rights, to discriminate in favour of their own group companies and against potential competitors and users of the transmission system. Therefore, effective competition crucially depends on non-discriminatory 'Third Party Access'. Viewed from the market failure perspective of economic efficiency (natural monopoly of transmission), this constitutes the main regulatory challenge in the power sector after liberalization.

However, this is not the sole task of public regulation. As I have shown above, regulation typically has to deal with a variety of other social and political goals and interests. In the power sec-

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<sup>3</sup> Much of the information used in this part was provided by the European Commission, DG XVII, Energy, Unit A3 (Functioning of the internal energy market), see also <http://www.europa.eu.int/en/comm/dg17/dg17home.htm>.



tor, two concerns beyond economic efficiency play an important role. First, certain universal service standards and rules continue to be applied: such as that all citizens are guaranteed electricity at fair prices, or that some vulnerable groups may benefit from special conditions. Second, the protection of the environment remains a fundamental concern. Obviously, the political process brings in a variety of further interests: for example, the interest of employees in the national ex-monopolies, which tend to reduce their workforce under the pressure of competition. Public service or environmental protection concerns need not, by necessity, conflict with the goal of economic efficiency in a liberalized market. But the distributive effects of sectoral restructuring and reregulation is likely to create both winners and losers (who are not compensated out of efficiency gains generated by liberalization), and both have incentives to mobilize. Therefore, regulation is faced with the delicate task of balancing competing concerns and interests in a conflictual environment.

### ***3. Getting a Grip on the Variety of Regulatory Solutions: The Organizational and Functional Dimension of Regulation***

To analyse the variety of institutional solutions found for this regulatory challenge, it seems useful to distinguish between two dimensions of regulatory variation. The functional dimension is concerned with the scope and goals of regulation. The central question is how to balance competing concerns. The organizational dimension involves the architecture and design of regulatory institutions. The central question is who is to regulate, and on which territorial level is regulation to be carried out. I shall turn to the latter dimension first, starting with the relationship between the EU and the national level.

#### **3.1. The Organizational Dimension**

Electricity management in Europe is no longer a matter entirely left to the nation-states. Nor has the new regulatory function been simply moved to the EU level. Rather, a complex, multi-tier fabric of public regulation is about to emerge. Roughly speaking, the distribution of competences looks like this: A broad framework, setting out minimum requirements, rules and conditions, is defined on the European level. The member states are given a large margin of choice as to how

they seek to achieve the goals defined. For example, the electricity directive requires member states to ensure management unbundling of their transmission system operators and accounting separation of transmission (and distribution), so as to prevent discrimination against new competitors. But member states are free to choose between different forms of unbundling. In some countries, a separate legal entity was created to manage the network and grant access rights, while in other national systems, the transmission system operators are only independent in management and accounting terms from the generation and supply parts within a single electricity company.

We find the same pattern among member states as far as the crucial question of third party access is concerned. The directive provides three alternative methods to achieve non-discriminatory access to electricity wires: regulated third party access, negotiated third party access and the so-called single buyer model. While most countries have opted for regulated third party access whereby tariffs for network access and use are fixed by relevant authorities and applied to all users, Germany chose negotiated third party access, wherein each user negotiates the terms of access with the system operator.

According to the subsidiarity principle, a substantial portion of regulation is, thus, left to the member states, which are required by Article 22 of the EU directive to "create appropriate and efficient mechanisms for regulation, control and transparency". In principle, disputes in terms of network access are supposed to be settled by national regulatory bodies or competition authorities. This does not mean, though, that the European level does not play any active role besides setting out basic rules and requirements. EU competition rules are applicable to the power sector. This concerns issues of cross-border trade in particular. But again, the pattern is not one of simple subordination of national policies. There is also a good deal of expertise-based exchange and cooperation between national and EU competition policies in the energy sector.

Furthermore, and based on the same logic, the European Commission, while respecting the formal regulatory competencies granted to the member states, seeks to achieve uniform regulatory standards by facilitating the emergence of common regulatory philosophies to be shared by national regulatory policy-makers: "While it is not appropriate to propose the harmonisation of regulatory approaches at the national level, an active policy through benchmarking is clearly appropriate. These objectives are pursued notably via the organisation of the bi-annual meeting of EU electricity regulatory forum in Florence" (European Commission 1999: 25). The Commission does not exclude the idea that for some issues vital for a common market in electricity, the soft

instrument of encouraging common regulatory philosophies will not suffice. The current issue under review is cross-border transmission tariffication, which can neither be simply delegated to the national level nor be sufficiently handled by ex-post EU competition law. To achieve a single EU-wide tariffication system, which is a prerequisite for the expected increase in cross-border trade to work properly, the Commission might proceed to propose "some new form of regulatory instrument" or the "establishment of a 'European Regulator'" (European Commission 1999: 27).

In sum, we find complex patterns of two-tier regulation (McGowan/ Wallace 1996), which go beyond a neat division of labor between the European and the national level (definition of framework versus implementation) but also entail important interaction effects such as policy diffusion and regulatory learning. Therefore, regulatory patterns and solutions are not controlled by any single level or actor.

The margin of choice left to Member States in the regulation of electricity markets results in different organizational solutions on the national level. To start with, the pre-regulation process of sectoral restructuring and liberalization looks quite different across countries. This does not only concern, as we have already seen above, the differential degree and timing of market opening. Also, different avenues were chosen as regards the crucial issues of restructuring, ownership and changes in established oversight structures, which are considered important "prerequisites for the introduction of competition, especially if the industry is highly concentrated horizontally and vertically-integrated" (OECD 1997: 165). Whereas some countries opted for restructuring the power sector prior to privatization and liberalization, for example, by splitting up the national monopolist into different companies, or by establishing a new independent entity to manage the grid, in other countries liberalization happened on the basis of the given industry and ownership structure. These different starting points have important effects, insofar as they shape the conditions for market competition and crucially define the regulatory challenge.

The national regulatory institutions put into place in the aftermath of restructuring and liberalization exhibit important differences. National systems differ as to how they distribute regulatory powers between traditional ministries, independent regulatory agencies or competition authorities. Most countries established a sector-specific industry regulator with the power to regulate, ex ante, the prices and conditions charged by the transmission system operators, who control grid access.

Only Germany relies on ex post oversight by the national competition authority to prevent the abuse of monopoly power. Transmission rules and prices are not set by a regulatory authority, but are, in principle, the result of bilateral negotiations (negotiated third party access) between the system operator and the user. However, some ground rules and guidelines for grid access were laid down in a Grid Cod, as part of a larger inter-associational agreement between the electricity companies, the large industrial users, and Federation of German Industry. This 'self-regulatory' agreement, which is under review at the moment, works as a substitute for public regulation.

This last point draws our attention to the fact that national regulatory regimes also differ with respect to the role and power they give to the different stakeholders in the regulatory process. Another example is the role played by consumer councils, which assist and advise independent regulators. The organizational and procedural design of regulation affects the chances of different interests to participate in and influence regulatory decision-making. This is an important link between the organizational dimension of regulation and the functional or material dimension of regulation, to which I shall turn now.

### 3.2. The Functional Dimension

The functional dimension of regulation, that is the scope and goals of regulation, is also subject to important variations. Both the EU framework and all national systems recognize that, while competition and economic efficiency in the electricity sector is of greatest importance, this goal must co-exist not only with security of supply considerations (availability of capacity, grid management, etc.) but also with public service policy objectives, notably universal service and environmental protection. The EU electricity directive enables member states to individually define public service obligations in the general economic interest, provided that they are objective, transparent and non-discriminatory, and that they fall into one of the following five categories: security of supply, regularity, quality and prices of supplies and environmental protection.

This is in line with the general recognition, laid down in the Amsterdam Treaty revisions, that 'services of general economic interest' play an important role "in promoting social and territorial cohesion" and that "the Community and the Member States (...) shall take care that such services operate on the basis of principles and conditions which enable them to fulfill their missions" (Art. 16). While this does not constrain the scope of the competition principle in any general way, it

can be read as a "signal to the Commission, the Court and the legal profession that (...) more weight ought to be given to the purposes served by public service missions" (Scharpf 1997: 4). Earlier rulings of the Court of Justice (e.g. Alemelo and Corbeau cases) upholding the national imposition of a public service obligation on the basis of Art. 90, suggest that, in the legal space, too, the competition principle is being balanced by stressing alternative social values such as interregional equity in a national setting.

The European framework thus accords member states considerable freedom to pursue, within certain limits, their own welfare concerns in electricity management. Accordingly, member states have developed different sets of specific provisions to achieve public service goals. In the realm of universal service and consumer protection, for instance, some countries go beyond the usual obligation to connect costumers and to supply electricity on a regular basis, and require that 'captive' costumers, who cannot buy at competitive prices, are charged 'reasonable prices' (Finland) or some 'maximum' price (Netherlands). Futhermore, some countries lay down special service provisions for the protection of the elderly and disabled costumers (U.K.). In the field of environmental protection, different kinds of constraints are imposed on suppliers so as to ensure environment-friendly forms of electricity production (e.g. Austria, Denmark, Germany). Moreover, different methods are employed to support the use of renewable energy sources: direct investment subsidies and the obligation to purchase from small renewable producers (Sweden) or tax refunds and green pricing funds (Netherlands).

More generally, countries have very different understandings of the nature of public service. It may not come as a surprise that in the French case, public service, as laid down in the draft electricity law, is very broadly defined, including the requirement to contribute to "social cohesion" and to the "implementation of national policies, such as energy policy". Therefore, the type and scope of obligations imposed upon electricity undertakings look quite different from country to country.

Since in most countries, electricity reregulation is a recent business, it remains to be seen (and remains a matter of empirical inquiry) how, in practice and over time, national regulatory bodies will balance competition with public service goals, and with which distributional effects for consumers, producers, and other affected interests and parties. If the experience of pioneering countries (U.K., Scandinavia) is any guide, the picture suggests that the competition principle has

been in the driver's seat, and that utility shareholders (including international investors) and large industrial consumers benefitted most, while the workforce of former national monopolists lost in terms of job cuts (see for the British case Surrey 1996). Public service goals seem to be best respected if and insofar as they are successfully incorporated into the market logic (e.g. market incentives for the use of renewables).

Regulatory practice will be influenced by the way public regulation is organized. This is because different types of regulatory bodies pursue different sets of goals, are more or less responsive to different kinds of interests, and are integrated in different ways into the EU multi-level fabric. To give an example: it seems reasonable to assume that general competition authorities will give more weight to the single goal of competition, while national, sector-specific ministries will be more inclined and pressured to take a variety of social and political goals into consideration.

In sum, electricity regulation in Europe is characterized by substantial organizational and functional variation. If, in addition, we introduce sectoral variation, it becomes clear that to speak of 'the European regulatory state' in terms of economic regulation of infrastructures and utilities does not make much sense. It is more appropriate to view economic regulation as a variety of regulatory regimes.

#### ***4. A Tentative Guide to Explaining Variation: The Trias of Configurational Patterns***

How to explain the variety of regulatory regimes? Above, I have briefly spelled out the two factors which might be considered crucial in accounting for sectoral variation between different fields of infrastructures and utilities. In order to explain regulatory variation within one sector, I propose to focus on three configurations or patterns of institutional variables. The first one is more structure-oriented, looking at the organization of political authority and decision-making. The second one is more process-oriented, focusing on state-society relations and interest representation. The third is about the 'belief systems' and 'policy frames' which inform the substance of regulatory choice. I will briefly illustrate the explanatory potential of the three patterns.

#### 4.1. Structures of Political Organization

Regulatory policy-making is embedded in larger structures of political organization which can be expected to influence the design of regulatory institutions and the nature of the regulatory process. A good case in point is how the characteristic features of the EU multi-level system shape the picture of electricity regulation.

As a rule, EU liberalization is driven by the supranational dynamic of 'negative integration' (market opening), which enjoys both a strong legal and ideological footing, rather independent of member state control.<sup>4</sup> 'Positive integration', that is re-regulation on the EU level, by contrast, is very difficult to achieve because it depends on a political consensus among member states. It is true that the EU has been quite successful in establishing policies and agencies concerned with social regulation (environment, health, safety of the workplace). This success is possible because social regulation is about product- or mobility-related rules which complement the market-creating logic of negative integration. Economic regulation, however, is a different matter. It makes rules concerning the conditions of production, bringing the starkly different economic conditions in Europe, and, thus, diverging member states interests into play and conflict. This is a major obstacle to regulation on the European level.

This institutional context helps to explain why there is no simple centralization of regulatory functions at the EU level and shifts attention to the patterns of level interaction instead. The fact that EU-level actors, like the Commission, seek to influence national regulatory policy-making by creating informal networks disseminating knowledge and 'good practice' (take the Electricity Regulation Forum mentioned above as an example) can also be attributed to the fact that the EU lacks hierarchical regulatory powers. Regulation by networks (Dehousse 1997), policy diffusion and regulatory learning, thus, play an important role. These are, of course, not the only interaction effects. The mutual dependence of national and European actors in the multi-level set-up might also encourage more negative effects such as administrative competition or deadlock.

On the national level, too, the general structures of political organization will shape regulatory design and process. One important dimension is the degree of (vertical) centralization and (hori-

zontal) concentration of decision-making powers within a political system. In federal Germany, for example, Länder authorities as well as local governments traditionally play an important ownership and management role in the electricity sector. The new regulatory regime does not break with this tradition by creating a central regulatory agency on the federal level, but continues to grant some regulatory powers to Länder authorities, next to fully exposing the sector to national competition law monitored by the federal competition authority. The temporary authorization of the single-buyer model as an alternative model of grid access, next to Negotiated Third Party Access, granted (at least until 2005) by the new legislation, is designed to protect municipal ownership interests.

A strong horizontal concentration of decision-making powers with few 'veto players' able to obstruct the will of the political executive, and few legal constraints on the exercise of these powers, gives the government of the day substantial powers to intervene into or rearrange the regulatory regime. In the British case, for example, the incoming Labour Government, which had picked upon public indignation over 'excessive utility profits' when in opposition, imposed a one-time 'windfall tax' aimed to recoup the 'super profits' which the utilities and their shareholders had reaped, immediately following privatization. To be sure, the transition to a new, post-privatization regulatory regime has rather led to a certain fragmentation of executive powers, with the rise of independent regulatory agencies who share powers with the Secretary of State and the national competition authorities. However, British traditions of executive concentration of powers prevail insofar as individual industry regulators have been vested with enormous powers, while regulatory discretion is subject to few procedural or material constraints. Consequently, individual regulators have established themselves at the center of the regulatory process. A telling example from electricity regulation is the dramatic March 1995 volte-face revision of electricity prices, which had only previously been fixed in August 1994. The regulator Littlechild decided to tighten the price cap after the defense of one of the 12 Regional Electricity Companies, Northern Electric, to a takeover bid revealed "that the company was far wealthier than the regulator and the public had appreciated" (Sturm/ Wilks 1997: 31).

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<sup>4</sup> As seen earlier, in the sensitive case of electricity, however, member state opposition to liberalization was strong and a compromise in the European Council had to be found. For the distinction between negative and positive integration, see Scharpf 1996.



## 4.2. State-Society Relations

The second, more process-oriented pattern of variables looks at the organization of societal interests and established patterns of interaction between public and private actors, in which the relationship between public regulator and private regulatee are embedded. In particular, it refers to different forms of interest representation and mediation.

The organization of societal interests plays a double role in shaping the regulatory process. First, the process of sectoral restructuring and liberalization which, as stressed above, defines crucial parameters of the future regulatory process, reflects the relative power of different interests. For example, in some countries, vertically integrated electricity undertakings were strong enough to prevent pro-competitive disintegration (structural unbundling) and the transfer of management of electricity wires to an independent grid company. Obviously, such a transfer is much more difficult to achieve under conditions of fragmented, private grid ownership, but countries with former national monopolists also differ in this respect (e.g. Britain and Sweden versus France).

Another case in point is the variable distribution of costs and benefits by sectoral restructuring and liberalization. In the British case, the initial 'regulatory contract' struck between the government and the electricity companies strongly favoured the interests of companies' executives and utility shareholders and investors (Veljanovski 1991). This contract reflected the converging interest of the incumbents' management and the government to make privatization a success at the stock market.

By way of contrast, the draft electricity law in the French case protects the privileged position of the former monopolist's workforce, by requiring that future competitors must grant equivalent social and labour rights to their employees. This provision reflects the relative strength of trade unions in the sectoral restructuring process.

Second, societal interests considerably influence the exercise of regulatory powers and the course of the regulatory process. A good example is the German regulatory regime. As outlined earlier, established electricity companies and business users' associations successfully pressed for being granted extensive 'self-regulatory' powers to define the basic rules and guidelines for grid access.

Thus, private agreements between industry associations took the place of public regulation of transmission prices and conditions. The Federal Ministry of Economics has, so far, renounced the use of transmission-related regulatory powers, granted by the new energy law, and continues to rely on ex post oversight by the competition authority.

This example illustrates how established patterns of interest representation (strong role of associations and 'private interest governments' in the German case) mould regulatory processes. Different types of state-society relations can be expected to have different impacts upon the nature and outcome of the regulatory process (Wilks/ Wright 1987). In pluralist systems, for instance, one would expect the relationship between regulatory agencies and regulated industries to be rather formalized and distant, or even conflictual. The risk of capture seems rather low, but compliance costs might be high due to the conflictual nature of the regulatory process. In corporatist systems, which build on close relationships of exchange and cooperation between state agencies and a small number of businesses, regulation should be much less conflictual, but will systematically exclude interests (e.g. consumers) which are not part of the corporatist network.

#### 4.3. The Power of Ideas

Third, and finally, regulatory policy-making is not only structured and influenced by institutional and societal constraints, but also by certain sets of ideas and 'policy frames'. Ideas have been recognized as key independent variables in the policy process shaping agenda-setting and the choice of policy options (e.g. Hall 1993). Regulatory philosophies and frames are particularly important when it comes to substantive issues of regulation. As we have seen, the EU framework of electricity regulation leaves policy-makers considerable margins to opt for different packages of goal balancing. The relative weight policy-makers accord to competing concerns is influenced by deeply entrenched state traditions (Dyson 1980) and 'belief systems' (Sabatier 1988) defining the proper role of the state and the scope of public responsibilities.

The classical example mentioned above is the concept of public service, which is interpreted in very different ways across countries. In the French Republican tradition, for example, 'service public' is an essential principle and a mission to be guaranteed by the state (Bauby 1997). The French electricity draft law defines the entire sector as "service public de l'électricité". The stated

aim of new legislation is to combine the strengthening of the public service of electricity with the introduction of "some controlled elements of competition".

In the Anglo-Saxon context, by contrast, the competition principle ranks much higher. While competition is the overriding principle, the course of action pursued by individual industry regulators is also shaped by specific economic-philosophical backgrounds and schools of thought. One of the architects of British utility regulation, Professor Littlechild, who later was appointed electricity regulator, can be shown to be guided by the Austrian school of economic thinking, though, in practice, his approach had unintended consequences (Burton 1997).

To be sure, policy paradigms or frames are often used to advance specific interests. Also, they are not inert but might evolve over time. The definition of policy frames is an important way to exercise 'soft' power and shape the direction and outcomes of policies. The efforts of the European Commission to establish common standards of 'good regulatory practice' in electricity regulation is a good example. The opening of a new policy arena (re-regulation after liberalization) creates a policy window for actors to set the agenda, by providing frames of 'good policy'.

*It is by careful empirical analysis of case-specific interactions of structural, process and idea-based, general patterns that we can arrive at explanations of why and how specific regulatory regimes emerge.* The peculiar German system of electricity regulation, for example, which relies on associational self-regulation of grid access, can be shown to result from the interaction of a decentralized and fragmented political system with a system of state-society relations, in which societal actors are granted a 'private government' role in sectoral management, underscored by the normative frame of organized market capitalism.

## **(C) Conclusions:**

Economic Regulation in Europe is characterized by considerable institutional complexity and variation. Instead of one regulatory state, we find a variety of regulatory regimes. In this paper, I have tried to map and illustrate the dimensions of regulatory variation, using the example of electricity regulation across EU member states. Economic theories and models of regulation fail to capture the variety of the regulatory process in the EU multi-level context. Therefore, a more sophisticated, political-institutionalist account is required. In such a perspective, 'configurational analysis', based on comparative empirical research, is proposed as a promising avenue of inquiry. In order to lay some foundations for such an explanatory enterprise, I have identified and illustrated three interrelated configurational patterns of variables designed to explain the variety of regulatory regimes.

However, the job to derive and test specific causal propositions remains to be done. Finally, once the variation of regulatory regimes or solutions has been explained, future comparative research faces still another challenge: To analyse if and how different regulatory regimes really make a difference in terms of policy outcomes (problem-solving, distribution of costs and benefits).

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