Regulation for competition in European gas markets: the impact of European law and facilitating factors.

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ABSTRACT The liberalisation of European gas markets is leading to a profound restructuring of the natural gas industry. Alongside this, new modes of economic governance are evolving on the European and national levels, triggering harmonisation and market integration through the application of legal provisions and communication instruments. In this paper, we analyse the impact of law on the convergence towards best-practice of regulatory regimes. By examining regulatory regimes in the old member states between 2000 and 2005, we show that the extent of specification in European legal provisions does not strongly correlate with the adoption of best-practice. Rather, a consensus has been generated within the Madrid Forum to implement various mechanisms, including network access measures, resulting in convergence towards best-practice. In order to learn more about factors that facilitate the adoption of regulation-for-competition, further research is needed to analyse in more detail the functioning of these communication instruments and conditions for their success.

1. Introduction

Across the advanced capitalist world, state control has been transformed considerably: from government to governance[1] (Treib, Bähr, & Falkner, 2007). The transformation of both states and markets has been a complex, interlinked process resulting in changes in governance and its modes that have affected both the economic and political spheres. From the 1980s onwards, state-owned utilities were increasingly perceived as less efficient than privately owned ones. Moreover, exploding public spending provided a tailwind for the New Public Management movement that promoted the rolling back of the state, or at least the redefinition of its functions. Whereas, formerly, the welfare state emphasised redistribution and taxation, the evolving regulatory state shifted its core functions to redistribution, stabilisation and regulation (Christensen & Leargreid, 2007; Jordana & Levi-Faur, 2004; Moran, 2002; Scott, 2004). The promotion of market privatisation and liberalisation resulted in a global wave of regulatory reforms (Jordana & Levi-Faur, 2004). Quickly, practitioners and scholars realised that rather than a process of liberalisation in the pure liberal understanding being initiated, in effect, a process of re-regulation was under way. In short, "the state is kept at arms length from direct participation in the economy but has a well developed regulatory role" (Christensen & Leargreid, 2007: 11).

On the basis of the single European Act (1987) and the agreement to create a European Economic Area in 1992, the European Union pursued European market integration and harmonisation alongside an ambitious liberalisation agenda (Jabko, 2004). The common market policy implied profound changes to economic governance in the European Union. Vertical decision-making gradually shifted from national to supranational coordination,

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[1] In political science, the concepts and modes of governance capture phenomena ranging from different institutional structures and actor constellations in political decision-making to various types of policy instruments (Treib, Bähr, & Falkner, 2007).

resulting in multilevel governance. Horizontally, non-state actors became more involved in policy formulation process on all levels (Kohler-Koch, 1999; Warntjen & Wonka, 2004). Instead of traditional command-style policies, regulation became increasingly important as the mode of governance. Academics argued that the rise of regulation in the European Union was abetted by the weakness of command and the lack of budgetary decision power of the EU institutions (Majone, 1998; Moran, 2002). Once Majone had postulated the idea of the European regulatory state, scholars of various disciplines have tried to capture what has replaced statutory state regulation in the European Union. What kinds of regulatory regimes have evolved across the EU? Do the changes in governance reflect a race to the bottom in terms of consumer, environmental and social standards? Or do new modes of governance promote best-practice and foster improved performance? Which roles do non-state actors actually fulfil? The list of research questions is long, rich and inexhaustible, and promises important insights into the transformation of modern states. In general, the questions reflect two main research interests. One strand of research focuses on analysing causes and facilitating factors of regulatory choices, and the other strand is more concerned with investigating the effects of regulatory reforms. This paper is part of the former strand by throwing some light onto the causes and facilitating factors that trigger regulatory choices in the context of European gas liberalisation. Since 1998, the EU has developed proactive policies to promote competition in European national gas markets. In this paper, we analyse the impact of law and communication instruments on the application of best-practice in terms of regulation-for-competition in EU-15 gas markets.

The paper's contents are organised into seven sections. In the second, below, we discuss the mechanisms and causes of policy convergence seen as new institutional approaches in the European comparative literature and identify those relevant to European gas market reform. Further, the conceptualisation of policy convergence and its application to regulatory regimes in European gas markets is elaborated (Section 3) and the adopted methodology summarised. In Section 4, the European legal provisions and their specification are displayed. Following this, empirical results are presented (Section 5) and the impact of transnational communication in the context of the Madrid Forum is discussed in Section 6 before conclusions are drawn in the final section.

2 European gas market integration: mechanism and causes of policy convergence

The Single European Act was a precondition for the creation of a common European internal market, a goal of the energy market reforms. Market integration and harmonisation have been central ideas but their interpretations have been continually contested. Studies on European integration identify two distinct understandings of economic integration, reflecting different degrees of depth and rate of progress. "In the dynamic understanding, it is the process whereby economic frontiers between member states are gradually eliminated […], with the formerly separate national economic entities gradually merging into a larger whole" (Molle, 2006: 4). The dynamic process results in a supranationalisation of competences and convergence of policies and regulations. Conversely, "in a static sense, it is the situation in which national components of a larger economic zone function together as one entity" (ibid.). Unlike the former vision, the static understanding of the European integration process is characterised by more-or-less

coordinated markets. The latter view stresses persisting intergovernmental approaches with national market coordination prevailing. Although both views ultimately strive for full market integration, the static understanding takes into account previous experiences of European market integration processes where, after sectoral market integration, these often resemble a static integration approach. These two views are pertinent to every sector reform and reflect the two extreme poles on the continuum of possible outcomes: policy convergence versus policy divergence.

The new institutional literature within comparative European studies highlights not only the opposing expectations regarding the convergence of regulatory patterns, but also identifies relevant mechanisms. Transaction cost economics offers an explanation as to why, under certain circumstances, supranationalisation and a convergence of certain public transactions might be more efficient than individual national solutions and specific regulatory choices. Institutional isomorphism notes the diffusion of organisational structures and policy programmes beyond efficiency considerations (Radaelli, 2000), while approaches in the tradition of historical institutionalism stress the importance of the fit between national characteristics and the regulatory choices desired by the European Union. In the following paragraphs, we will touch on the basic ideas of these various approaches and identify the most relevant mechanism for our analysis.

A central argument for creating common markets governed by common rules is taken from transaction cost economics. Based on this, the creation of general contracts and universal rules on the European level should result in the lowering of transaction costs in the European Union (see Molle, 2006: 19). According to Majone, the general growth of community regulation is partly induced by "the interest of multinational, export-oriented industries in avoiding inconsistent and progressively more stringent regulations in various EC and non-EC countries" (Majone, 1996: 1611). Héritier extends the argument by referring to the member states' interest in equating their national standards to European standards in order to minimise adaptation costs (Héritier, 1995: 278). The vertical stimulus resides in both the interests of the member states and the aim of establishing a level playing field for their industries (Mastenbroek, 2007: 60).

Although it is possible to derive an expectation of convergence from the transaction costs argument, it is not an inherent expectation. Thus, theory based on transaction costs argues that the incentives for supranationalisation depend on the character of the public good[2] which, in turn, affects the characteristics of transactions. In recent years, transaction cost economics has expanded from analysing the economic governance of pure market organisations to include political processes in the public sphere such as utility regulation (Crocker & Masten, 1996; Dixit, 1996; Macher & Richmann, 2006; Oliver E. Williamson, 1997, 1999). The application to the public sphere is based on the assumption that any transaction that can be expressed in the form of a contract can be analysed using transaction cost theory. Accordingly, utility regulation can be perceived as a regulatory transaction for which an administrative contract is formulated (Frant, 1991; Oliver E. Williamson, 1999). In this interpretation, institutional choices are explained by an

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[2] Transnational or multinational companies might also employ a two-level game strategy. A multinational company might welcome the opening up of other European markets and use the opportunity to enter those markets while, at the same time, the company might adopt a protectionist standpoint in its traditional national market. In such situations, a full supranationalisation of regulatory competencies is unlikely to be fully supported by transnational or multinational companies.

appropriate alignment between transactions and economic governance structures. Williamson's alignment hypothesis postulates "transactions, which differ in their attributes, are aligned with governance structures, which differ in their cost and competence, so as to effect a (mainly) transaction cost economizing result" (Oliver E. Williamson, 1998: 37). He defines frequency, uncertainty and asset-specificity as key characteristics. Determining whether liberalisation measures, such as the introduction of competition and the unbundling of integrated utilities, are seen as the most efficient approach with respect to transaction costs depends largely on the characteristics of a transaction.[3] Logically, agents would prefer to operate in liberal markets with unbundled companies when transactions can be characterised as low frequency, low uncertainty and low asset-specificity. Glachant (2002) and Spanjer (2006; Spanjer, 2007) demonstrate that transactions typical of the European gas market show contrary characteristics, which explains why public and private agents might well be reluctant to adopt a regulation-for-competition approach.

In a literature review, Heichel et al. consider findings from approximately 75 convergence studies, covering various policy fields. Ultimately, the authors conclude that there is no convergence in convergence research. Nevertheless, comparative analyses of public policies in political science have identified various reasons why some policies converge and others not. In the sub-field of European comparative policies, the historical institutional approaches perceive the general phenomenon of policy convergence from a transposition angle and analyse the compliance of European member states to European policy. Whereas the body of literature on policy convergence emphasises the mechanism that triggers policy-convergent policy changes across countries, and the facilitating factors determining the effectiveness of these mechanisms, the literature grouped around the goodness of fits idea has generated a considerable number of auxiliary variables which may determine the ease of compliance. The goodness of fit hypothesis assumes "that the ease of compliance depends on the goodness of fit between EU policy demands and existing national policies" (Mastenbroek, 2007: 60). Thus, it is in effect an argument for path dependence and puts the stress on the importance of national characteristics.[4] Recently, academics have criticised the focus on the goodness of fit, and argued that this is not the decisive variable (Falkner, Hartlapp, Leiber, & Treib, 2005; Haverland, 2000; Héritier, Kerwer, Knill, Teutsch, & Douillet, 2001; Mastenbroek, 2007). Supported by the mixed empirical results, they argue that a misfit is a necessary rather than a sufficient condition[5]. It is beyond the scope of this paper to discuss and test the numerous auxiliary variables that the goodness of fit approach has generated and, instead, we concentrate on the European harmonisation mechanism.

Convergence research and studies linked to the goodness of fit hypothesis identify European harmonisation as a stimulus which triggers convergence. Convergence research sees European harmonisation as a special form of the international harmonisation mechanism and identifies law as a driving factor. Once the Single European Act was in

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[3] In order to identify the most efficient governance structure, the actual transaction costs are compared either to an idealised governance model or to an existing alternative model.

[4] Similarly, Levi-Faur distinguishes between the Policy Sector and the National Pattern approaches to explain variations and similarities in privatisation and regulation-for-competition policies in Europe's and Latin America's telecoms and electricity industries (Levi-Faur, 2003).

[5] Mastenbroek systematically develops an argument rejecting the goodness of fit hypothesis (Mastenbroek, 2007).

place, and the decision to start gas market reform made, the causal mechanism of European harmonisation could take effect. In line with this, the stimulus of policy convergence is a legal obligation established by European law (see Holzinger & Knill, 2005: 778-782). The existence of legal provisions does not inevitably result in a convergence of policies or institutional arrangements. The success of harmonisation depends on the degree of legal specification. The more concretely that European law sets targets or prescribes regulatory instruments, the more likely that convergence will occur. Holzinger and Knill observe, "convergence effects are less pronounced, by contrast, if legal rules are defined in a less rigid way, leaving member states broad leeway for selecting appropriate instruments to comply with international policy objectives" (Holzinger & Knill, 2005: 787). They distinguish between formal institutions, in the form of European legislation, that are objectively based or determine minimum standards and those that set maximum standards. From an analysis of the implementation of electricity liberalisation in Germany, Eising's empirical findings support the view that EC rules do matter (Eising, 1999). A second factor affecting the degree of policy convergence is the capacity to enforce compliance (Holzinger & Knill, 2005: 793). A significant or possibly even full convergence towards best-practice can be expected if regulatory authorities not only have the capacity but also choose to enforce the rules.

In European policy processes, convergence of institutional arrangements and policies is not only induced by formal law, but also encouraged through diffusion and learning processes. This dimension of European governance is captured in the analytical framework of policy transfer and isomorphism. Holzinger and Knill, in their literature review, identify transnational communication as a relevant mechanism through which the promotion of policy convergence is triggered (2005). In this paper, we only draw on the mechanism for illustrative purposes and instead refer to Radaelli's detailed explanations of these two analytical frameworks and their application to European political processes (2000, 2005).

To sum up, our reflections on the application of transaction cost theory to the European gas markets suggests that member states are likely to be reluctant to adopt best-practice in terms of regulation-for-competition. Further, the empirical findings generated by comparative European studies enable us to formulate a general hypothesis which is supplemented by more detailed expectations below. In general, we would expect those subjects (indicators) of the gas market reforms that are most specified by European provisions to converge towards best practice (expectation 1). Furthermore, we would expect convergence effects to stem from the transfer of policy as a result of the mechanism of transnational communication.

3. Regulatory convergence in European gas markets: conceptual clarifications and their methodological application

This section provides working definitions and conceptual clarification of policy convergence and regulatory regimes in European gas markets. Further, we discuss the applied methodology. In general, our proposed conceptualisations are based on the assumption that regulatory choices are specific forms of policy choices. Consequently, regulatory convergence is perceived as a variant of policy convergence.

> Policy convergence can be defined as any increase in the similarity between one or more characteristics of a certain policy (e.g. policy objectives, policy instruments, policy settings) across a given set of political jurisdictions (supranational institutions, states, regions, local authorities) over a given period of time. Policy convergence thus describes the end result of a process of policy change over time towards some common point, regardless of causal process. (Knill, 2005: 29-30)

Knill's view remains close to the widely cited definition formulated by Bennett[6] but enriches it in two ways. Frstly, Knill renders it more precise by distinguishing between various types and levels of policies. This contributes to research stringency by drawing a clear line between policy process and policy outcome on the one hand, and the influence of multilevel governance on the other.[7] In the second part, Knill emphasises the dynamic nature of the concept. In this context, Jordan rightly notes, "…because policies are the same at a given point of time, does not necessarily confirm that policy convergence has occurred: they could have emerged independently but in similar forms" (Jordan, 2005: 946). To distinguish between coincidental and causal reasons for policy convergence, it is therefore necessary to emphasise the temporal dimension of the convergence concept. For the latter, "There must be a movement over time towards a common point" (Jordan, 2005: 946).

When analysing policy convergence with regard to regulatory regimes in European gas markets we concentrate on the policy outcome. In doing so, we analyse the policy and polity dimensions[8], and include those regulatory instruments or measures that are selected and implemented in order to fulfil the obligations imposed by the Gas Directives. The analysis aims to assess the similarities within regulatory instruments adopted by member states over time.

Comparative policy literature suggests several approaches for assessing convergence. Essentially, there are four main approaches which are referred to as sigma-, beta-, gamma- and delta-convergence (Heichel et. al., 2005: 831-834). For our purposes, only three of these are relevant: sigma-, gamma- and delta- convergence. These three types use indicators that reflect the degree, direction, scope and speed of change (see Holzinger & Knill, 2005). Given the limited number of European member states, and the focus on the old member states, the scope indicator is not relevant here (see next section).

Sigma-convergence, in its classical form, describes a "decreasing coefficient of variance" and follows the logic of "growing together" (Heichel et. al., 2005: 831). An assessment of sigma-convergence is often used in studies on economic globalisation, and also to measure similarities among policies and regulatory instruments. Sigma-convergence occurs if there is a decrease in the variation of policies among the countries under consideration (see Knill, 2005: 769). Most convergence studies of this kind adopt a quantitative approach, but it can also be used for qualitative analyses with a smaller

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[6] Bennett defines policy convergence as "a process of 'becoming' rather than a condition of 'being' more alike. "Convergence means moving from different positions towards some common point. To know that countries are alike, tells us nothing about convergence. There must be a movement over time towards a common point. In comparative research, therefore, the essential theoretical dimension is temporal rather than spatial" (Bennett cited by Jordan, 2005: 946).

[7] Studies are often criticised for not explicitly describing which policy elements they deal with (See Heichel et. al., 2005: 829) .

[8] The distinction is inspired by Busch and Genoud. In his analysis of state regulation of banking systems in western Europe and the United States, Busch distinguishes between content (policy), processes (politics) and institutional aspects (polity) (See Busch, 2002: 11; Genoud, 2001).

number of cases. Sigma-convergence, indicated by a decrease in the range and standard variation, occurs if there is an increase in the number of countries implementing the same instrument.

However, sigma-convergence does not cover the direction of change, and beta-, gamma- and delta-convergences can be used to describe three different aspects of qualitative change. Beta-convergence is frequently seen in economic convergence literature analysing, for instance, the economic progress of developing countries. Beta-convergence occurs when poor economies grow faster than rich ones, and its name is associated with the growth coefficient. As such, beta-convergence is useful in detecting the phenomenon of 'catching up'. The mobility dimension is here captured by gamma-convergence, which was formulated in response to criticisms of an overemphasis on beta-convergence. Beta-convergence is criticised for not capturing sufficient aspects of cross-country dynamics. For instance, convergence trends resulting from rich countries falling back are not reflected in beta-convergence but are in gamma-convergence (See Heichel et. al., 2005: 832).

Gamma-convergence reflects the mobility of countries with regard to the speed of implementing certain regulatory instruments.

> For the analysis of gamma-convergence, country rankings for different points of time are compared to assess the mobility of countries. If countries in the first ranks fall behind or others catch up over time, convergence occurs. (Heichel et. al., 2005: 832)

The analysis of gamma-convergence enriches the interpretation of sigma- and delta-convergences because it allows one to assess changes in country rankings over time. Gamma-convergence is particularly helpful in the analysis of path-dependency. In general, gamma convergence occurs when a lagging country catches-up or a leading country falls back. In this context, we can introduce a distinction between positive and negative gamma-convergence. We speak of positive gamma-convergence if one or more countries with the least favourite instruments or measures start to implement the favourite instrument.[9] Gamma-convergence is said to be strongly positive if this occurs in the early stages of the reform process. We speak of negative gamma-convergence if one or more countries that started with a favourable or even favourite instrument replace them with less favoured ones. This scheme can be developed from the indicator level up to the regime level. If a country begins with a relatively low score for its regulatory regime but catches up by achieving relatively high scores, then positive gamma-convergence is said to have occurred. The absence of either positive or negative gamma-convergence may indicate path dependency, although this is not a sufficient condition to confirm a path-dependent outcome.

The most sophisticated, but seldom applied, variant is delta-convergence (see Heichel et. al., 2005: 834). This type of analysis involves the direction of change. Ultimately, a decrease in variation between national policies will be accompanied by an upward or downward shift. Holzinger and Knill observe that "the direction of convergence is usually related to the extent of state intervention or to the strictness of a regulation"

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[9] The definition of which instrument is favourite and less favourite instruments is given in the methodology (Haase, 2008).

(Holzinger & Knill, 2005: 777). Delta-convergence assesses not only the direction of change, but describes the ordinary ranking of countries. According to Knill's definition, "we speak of delta-convergence when similarity change is operationalised by comparing countries distance changes to an exemplary model" (Knill, 2005: 769). To this end, a best-practice model of European gas market regulation has been developed and an index formulated to measure the distance from best practice in a comparable manner (Haase, 2008). Delta-convergence is said to occur if a decrease in the distance to the best-practice model can be identified. Observing trends using an indicator perspective, delta-convergence occurs when an increasing number of countries apply the instrument considered to be best-practice and receive high scores. Translating this to the regime level, delta convergence is exhibited when an increasing number of countries achieve high scores.

In all the types of assessment discussed, one should not overlook the fact that the various convergence types often occur simultaneously. In their portrayal of convergence literature, Heichel et al. (2005: 833) stress that "empirically, sigma- and delta-convergence often occur simultaneously. If countries reach total similarity relative to a policy model, variance between them is obviously reduced"(Heichel et. al., 2005: 833). Nevertheless, one should not forget that the different types of convergence can also occur on their own.

To assess these three different convergence types it is necessary to define and conceptualise regulatory regimes as they have evolved in the context of the European gas markets since liberalisation. Here, a regulatory regime[10] is defined as the bundle of institutional arrangements triggered by the liberalisation process in the context of the European gas reform. These institutional arrangements are mainly implemented on a national level in anticipation of meeting obligations imposed by the European Gas Directives. With reference to Williamson, we distinguish between formal institutions, such as laws, and institutional arrangements (see Oliver E. Williamson, 1998: 25-29). In general, institutional arrangements span actual regulatory instruments and decisions as well as contracts, forms of public and private cooperation, and firms' tariff structures and trading practices (see International Gas Union, 2006: 22-23). Our analysis concentrates on the formal dimension: the actual regulatory instruments or so-called hands-on regulation (ibid.). Regulatory practices are not included in the assessment of regulatory regimes.

For the operationalisation of regulatory regime we refer to the concept of regulatory comprehensiveness initially put forward by Genoud, coined jointly by Finger and Genoud, and then modified by Arentsen (Arentsen, 2004; Genoud, 2001; Genoud & Finger, 2004). Genoud conceptualised regulation in the context of electricity liberalisation reforms in order to analyse the impact of privatisation on regulatory performance in terms of coherence, efficiency and effectiveness. Genoud took a somewhat broader public policy perspective than the economic-biased understanding of regulation perceived in various theories on regulation. In his essentially descriptive analytical framework, he suggests that existing regulation and privatisation situations shape the outcomes of regulatory games. In this context, it is necessary to assess and conceptualise the coherence of regulation as both an independent and a dependent

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[10] A general definition is given in the introduction.

variable. For the latter, he focuses on the coherence and efficiency aspects (see Genoud, 2001: 26-27). Within the process of conceptualisation, Genoud made two important steps that are relevant for our analysis. Firstly, by taking a public policy perspective, Genoud was able to distinguish between the policy and polity dimensions of the regulatory regime (see Genoud, 2001: 13). Arentsen labelled these two dimensions regulatory function and regulatory competencies (see Arentsen, 2004: 85). Secondly, Genoud introduces the idea of coherence of regulation and proposed criteria for assessing this coherence. Later, Finger and Genoud coined and operationalised the concept of comprehensive regulation for electricity reform (see Genoud & Finger, 2004). Arentsen (2004) then applied it to European gas reform. The concept of regulatory comprehensiveness is embedded in the structure-conduct-performance paradigm (Bain, 1968) when perceiving regulatory comprehensiveness as a regulation variable linked to the structure, business conduct and performance triangle. Finger, Genoud and Arentsen agree that regulatory comprehensiveness determines the degree of openness of gas markets. This is perceived as a basic component of the degree of competition. In addition to regulation, market structures and business strategies also influence the degree of competitiveness in gas markets. The comprehensiveness of a regulation can be seen as a two-dimensional concept: "one dimension referring to necessary regulatory functions and one dimension referring to regulatory competencies" (Arentsen, 2004: 85). Ultimately, the concept makes it possible "to assess whether or not the Member State's legal reforms meet formal standards of a competition-based gas market" (ibid.).

In assessing regulatory regimes in the natural gas sector we draw on an earlier study produced jointly with the Oxford Institute for Energy Studies in which we developed a detailed methodology to assess the degree of convergence towards best-practice regulation (Haase, 2008).[11] The operationalisation rests on the two concepts identified above. Due to the absence of an existing best-practice model which would determine beforehand the values attached to the various indicators, a bottom-up approach was adopted. Firstly, relevant indicators were identified by considering economic theory on market liberalisation in the utility sector, European legal provisions and preference statements issued by the European Union were related to specific instrument choices made by member states. From these resources, the scoring for the various indicator values were deduced, on the basis of which an index could be created and a best-practice model formulated. This index is composed of 15 indicators with a total of 23 components. This process enables one to analyse sigma-, gamma- and delta-convergences and to investigate the correlation between the degree of specification and the degree of delta-convergence. The period studied begins with the introduction of the first Gas Directive in 1998 (which had to be implemented by 2000) and ends with the last available assessment at the end of 2005. Geographically, the study covers all the old member states with the exceptions of Greece, Portugal and Finland which were granted exemptions from the European Gas Directives.

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[11] In addition, this study takes into account the impact of the legal provisions for gas reform and energy policy objectives on the evolution of European gas market regulation.

4. European legal provisions and their specification

To date, reform of the European gas market is constituted by three legislative acts[12] introduced by the European Union as secondary legislation between 1998 and 2005. The first two Directives (Directive 98/30/EC and 2003/55/EC)[13] are classic framework directives. The implementations of the measures were supposed to be accomplished by 10 August 2000 for Directive 1998, and by 1 July 2004 for Directive 2003.[14] Before developing a third energy package in 2007, the European Commission decided to use Regulation[15] as the legal instrument. Framework regulations (Directives) and Regulations differ in the degree of discretion they allow member states. By definition, "directives bind the Member States as to the results to be achieved; they have to be transposed into the national legal framework and thus leave margin for manoeuvre as to the form and means of implementation" (See European Commission, 2006). Regulations do not give the same flexibility to the member states, but are directly applicable and binding for all members. Further, Regulations do not necessitate the national implementation of legislation as they follow the principle of subsidiarity, where national laws are not allowed to conflict with European secondary laws (such as Regulations). With the release of Regulation 1775/2005[16] in 2005, however, the EU overruled national laws using the justification that "It is now necessary to provide for structural changes in the regulatory framework to tackle remaining barriers to the completion of the internal market in particular regarding the gas trade" (European Commission, 2005) and that they perceived this could be better achieved at the Community level. The Regulation had to be implemented by 1 July 2006.[17]

Community legislation thus started as a somewhat principle-based approach and gradually developed. The nature of the reform (framework regulation) remains and no qualitative shift from a bottom-up approach towards a top-down approach, which determines the member states' instrument choices, can be detected. Assuming that the more concrete the European law is in setting targets or prescribing regulatory instruments the more likely it will be that national regimes converge, instrument-specific expectations are formulated.

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[12] Community law distinguishes between primary and secondary law. Primary legislation consists of the founding Treaties, whereas secondary legislation refers to Regulations and Directives enacted by the Community institutions by virtue of the former. "Once the European Constitution has been adopted, it will replace the current set of founding Treaties. Primary Community law will consist of the Constitution and its Protocols - including the Charter of Fundamental Rights, which it incorporated in it - and the Euratom Treaty." (European Commission, 2006).

[13] See European Commission 1998 and 2003. Here, we use the abbreviations Directive 1998/30/EC and Directive 2003/55/EC for citation purposes.

[14] The deadline for the majority of provisions in the second Directive was 1 July 2004. Exemptions are referred to in the text.

[15] The term regulation can refer to a specific form of legal tool in which case we capitalise the term (Regulation). A Regulation is thus one of the possible forms of regulation (along with Directives etc.).

[16] See Regulation 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission networks. Here, the abbreviation Regulation 1775/2005 is used. (See European Commission, 2005)

[17] Please note, the Guidelines for Third Pary Access are in the Annex of Regulation 1775/2005 and came into force on the 1 January 2007.

With regard to the member states' choice of instrument, the legal provisions seem to be either surprisingly ill-defined or rather complex, leaving the power invested in information largely with the incumbent companies.[18] Such was the situation when it came to creating or increasing the legal market openings which was dependant on the definition of eligible customer. Based on their initial degree of liberalisation, the legal norm requested for those countries which could be seen as liberalisation newcomers, was a market opening of 20% of annual natural gas consumption, increasing by 2003 to 28% and by 2008 to 33% of the market. For advanced markets, the targets were higher: a market opening of 38% by 2003 and of 43% by 2008. Later, the second Directive prescribed a full legal opening of the market for non-household consumers by 1 July 2004 and for all customers by 1 July 2007. Given these timescales, one would expect only limited, and not very strong, convergence prior to 2004 (our second expectation). With the legal market opening up completely for non-household consumers, the extent of the legal open market should increase everywhere after 1 July 2004.

Third Party Access (TPA) has been a central tool in introducing competition into the European gas markets. In the course of the reform, the provisions concerning TPA underwent profound improvements: beginning with negotiated TPA as a minimum requirement, under which it was mandatory to publish the main terms and conditions (see Directive 1998/30/EC), moving on to regulated TPA (rTPA), with published tariffs and methodologies (see Directive 2003/55/EC), and then envisaging a common network code in Regulation 1775. In this light, the shift from ex post to ex ante control of third party access can be viewed as one of the major achievements of the accelerating regulatory process. In the second Directive, the EU followed the same path for the introduction of third party access rules for storage, allowing the member states to adopt negotiated or regulated TPA to storage. It is noteworthy, however, that no instruments concerning allocation method, tariff structure, type of capacity booking, minimum booking periods of transport capacity, level of tariffs, incentive regulation and the 'use it or lose it' principle have been covered by the regulations. The same is true for balancing requirements. Although the EU expressed a general favour for market-based mechanisms, balancing rules were not prescribed. The legal provisions also failed to prescribe gas release programmes or specific trading facilities. Based on these 'gaps', we would therefore expect limited (delta-) convergence to stem from the European legislation (expectation 3) in this period. However, regulated TPA had to be implemented by 1 July 2004 and we should therefore see a higher degree of delta-convergence in the last two measurements of the analysis covering 2005 (expectation 4). The same applies to negotiated TPA to storage (expectation 5).

The first Directive introduced legal unbundling, but it was not prescribed as a minimum requirement in Directive 1998/30/EC. Since then, the unbundling requirements have been gradually enhanced by firstly demanding legal unbundling and then the introduction of so-called management unbundling (functional unbundling), as opposed to insisting on a rigid unbundling regime such as ownership unbundling. In terms of the unbundling

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[18] This criticism is certainly not aimed at the European Commission which did an excellent job in finding windows of opportunity to deepen European gas market integration. Rather, the instruments are often poorly defined or ill-determined due to political pressues. Usually, Directives have to be suffiicently precise to meet the regulatory purpose and sufficiently vague to gain the necessary support of member states and the European Parliament.

provisions, we formulate three expectations with regard to the convergence of regulatory instrument choices. According to the first Gas Directive (GD), separate accounts should be published by 10 August 2000. Therefore, we should observe full convergence on this issue throughout the entire observation period (expectation 6). Legal unbundling of transmission system operators should be the norm by 1 July 2004 (expectation 7). With regard to the legal unbundling of distribution system operators, the second GD allows two exemption options that extend beyond 1 July 2007. Consequently, we would expect a low degree of convergence in terms of legal unbundling and no convergence towards ownership unbundling on the DSO level (expectation 8). As a result, the degree of convergence of unbundling measures on the DSO level should be lower than on the TSO level (expectation 9).

The acceleration Directive introduces, in addition to rTPA, also TPA for storage, balancing rules, management unbundling and the quest to define national regulatory authorities. Again, the legal text offers the member states considerable leeway and they can either centralise regulatory functions under the roof of one regulator or distribute regulatory functions among several authorities. Nevertheless, DG TREN's interpretive note leaves no doubt that the EU prefers the creation of independent national regulators and, with this, the centralisation of regulatory oversight. So far, the legal provisions do not insist that member states transfer competences to the national regulator. In other words, it is unlikely that the legal provisions will induce a high degree of delta-convergence for those indicators belonging to the polity dimension during the period studied (expectation 10).

5. Empirical results

The empirical results are presented by summarising the occurrence and extent of the three convergence types for the regulatory function and regulatory competence dimensions (see tables below). From an indicator perspective, we then discuss whether our expectations are met.

In seven instances, we observed no decrease in the variance over our study period. A lack of progress towards harmonisation is evident for the following indicators and components: 'allocation method', 'tariff', 'incentive regulation', 'minimum booking period firm services', 'trading facilities' and 'publication of accounts' on both the TSO and DSO levels. Sigma convergence is predominantly induced by the other nine factors considered. The decrease in variance can also be measured for the regulatory function dimension. The aggregate member state scores for this dimension increased annually by approximately 3 -10 points. Beginning in 2001 with 81 points, rising to 92 points in 2002, 95 points in 2003, 104 points in 2004, and closing our study with 110 points in 2005. At the same time the range of scores decreased from an initial 105 points in 2001 to 75 points in 2005.

Table 1: Occurrence and degree of convergence (regulatory function dimension)

Type of convergence		Sigma	Gamma	Delta
Indicator 1	Legal market opening	ü	(+) 50%	58.3%
Indicator 2	Gas network access conditions and tariffication			
Component 2.1	Tariff structure	ü	(+) 58.3%	75%
Component 2.2	Type of capacity booking	ü	(+) 75% (-) 8.3%	83.3%
Component 2.3	Allocation method		0%	16.6%
Component 2.4	Tariff		(+) 33.3% (-) 75%	25%
Component 2.5	Incentive regulation		(+) 50% (-) 8.3%	41.7%
Component 2.6	Minimum booking period firm service		(+) 58.7% (-) 16.6%	50%
Component 2.7	Use it or lose it (UIOLI)	ü	(+) 75.5%	100%
Indicator 3	Balancing rules	ü	(+) 8.3%	100%
Indicator 4	TPA storage	ü	(+) 75%	83.3%
Indicator 5	Gas release programme	ü	(+) 58.3%	58.3%
Indicator 6	Trading facilities		(+) 41.7%	8.3%
Indicator 7	Network unbundling of Transmission System Operator (TSO)			
Component 7.1	Basic TSO unbundling model	ü	(+) 50% (-) 8.3%	41.7%
Component 7.2	Publication of TSO accounts		(+) 83.3% (-) 33.3%	66.7%
Indicator 8	Network unbundling of Distribution System Operator (DSO)			
Component 8.1	Basic DSO unbundling model	ü	(+) 8.3%	8.3%
Component 8.2	Publication of DSO accounts		(+) 66.7% (-) 33.3%	50%

The shift towards a regulatory regime that supports competition is to a large extent reflected in the positive gamma-convergence. Within the regulatory function dimension, positive gamma-convergence was predominantly moderate as shown in Table 1. With regard to 'tariffs', 'balancing period' and 'unbundling measures on the distribution level' only a low degree of positive gamma-convergence was found[19]. Whereas components such as 'type of capacity booking', 'UIOLI', 'third party access to storage', and 'publication of TSO accounts' showed a high degree of delta-convergence. Regulatory inertia was visible in the case of five indicators where a low degree of negative gamma-convergence was found. This applied to 'type of capacity booking', 'minimum booking period firm services', 'unbundling on the transmission level' and the 'publication of TSO and DSO accounts'.

Network access conditions and tariffication were prominent features of the gas reform process: the EC, in conjunction with national regulators CEER and ERGEG, strongly emphasised harmonisation and measures to induce and promote competition. For this reason, the success of these efforts is given closer attention here, and Indicator 2 (network access conditions and tariffication) is considered separately. The indicator is made up of seven components, five of which show a moderate or high degree of delta-convergence indicating a clear trend towards best-practice over time. This is unexpected and remarkable given that specific regulatory instruments were not prescribed by the legal provisions. The introduction of auctions as an allocation method and the reduction of tariffs across Europe have been less successful. For some countries, the tariff component shows the opposite trend towards higher tariffs. Denmark's, France's and Ireland's tariffs, which were originally in the upper-middle range, even increased over time.[20]

In general, the indicators representing the regulatory function dimension show a moderate degree of harmonisation (54%) and a trend towards best-practice. A high degree of delta-convergence was found for the 'tariff structure', 'type of capacity booking', 'UIOLI', balancing period' and the 'third party access to storage' indicators/components. The majority of indicators showed a moderate degree of delta-convergence, namely 'legal market opening', 'incentive regulation', 'minimum booking period firm service', 'gas release programme', 'basic TSO unbundling model' and 'publication of both TSO and DSO accounts'. In four instances, delta-convergence was low: 'tariffs', 'allocation method', 'trading facilities' and 'DSO unbundling'.

We get a mixed picture if we relate the indicators' performances in terms of delta-convergence to the precision of the European legal provisions. For the 'legal market opening', 'TPA storage' and 'legal unbundling on the TSO level' indicators we observe a high degree of precision in the legal provisions and this would seem to correspond with the observed high, or at least moderate, delta-convergence. The observations regarding 'trading facilities' and to a lesser extent 'incentive regulation', 'minimum booking period firm service', 'gas release programme', 'TSO unbundling', 'DSO unbundling' point in the same direction. For these indicators, a low precision in legal provisions is reflected in a low or moderate degree of delta-convergence, suggesting a positive correlation. The legal provisions for unbundling the TSO and DSO levels deviated in terms of their

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[19] A definition of low, moderate and high degrees of delta-convergence is given in the detailed methodology (Haase, 2008).

[20] A recent overview of the different tariffs in selected Western European companies is provided by Little (See Arthur D. Little, 2007).

ambitions. Therefore, we predicted (expectation 9) that the degree of convergence would be lower for the DSO unbundling than for the TSOs. In line with this, we observed a marginal delta-convergence of 8% for DSO unbundling as opposed to a moderate 42% for TSO unbundling.

Nevertheless, the anticipated positive correlation is contested by contrary observations. Several indicators achieved a high degree of delta-convergence despite the legal provisions not prescribing regulatory instruments. This was the case for 'tariff structure', 'type of capacity booking', 'UIOLI' and 'balancing period'. Conversely, we expected full convergence for the publication of TSO and DSO accounts since this instrument has been mandatory since the introduction of the first Directive. However, this was found not to be the case, indicating that legal provisions have little influence on the member states implementation practice.

To sum up, we see some indications of a positive correlation between the degree of precision in the European legal provisions and the degree of convergence. Although the majority of indicators support a positive correlation, the number of indicators with contradictory observations is too high to speak of there being a strong correlation that would allow conditions to be formulated.

As with the indicators for the regulatory function dimension, those related to regulatory competence also show a trend towards convergence, and the degree appears, at first glance, to be even stronger. Sigma-convergence was found in six out of the seven indicators (see Table 2). The mean scores for regulatory competences are very stable and increased only slightly from 42 points in 2001 to 51, and 56 points in 2005. The range diminished from 63 to 43 points over the same period. This decrease in variance is mainly due to changes within Germany. Germany recorded the lowest scores in the first two years, marked with a low of 7.5 points, but achieved 23 points in 2005. In other words, the sigma-convergence found in the regulatory competence dimension is largely due to a strengthening of German regulatory competences.

Table 2: Occurrence and degree of convergence (regulatory competence dimension)

Type of convergence		Sigma	Gamma	Delta
Indicator 9	Type of decision-making by regulatory authority (ex ante/ex post)	ü	(+) 75% (-) 8.3%	83.3%
Indicator 10	Capacity allocation rule decided by regulator		(+) 33.3% (-) 16.6%	33.3%
Indicator 11	Balancing conditions approved by regulator	ü	(+) 58.3% (-) 50%	33.3%
Indicator 12	Dispute settlement	ü	(+) 91.7% (-) 16.6%	75%
Indicator 13	Type of Regulator	ü	(+) 83.3%	83.3%
Indicator 14	Ratio of national gas consumption to staff numbers at the national regulator	ü	(+) 50% (-) 16.6%	50%
Indicator 15	Ratio of national gas consumption to the budget of the national regulator	ü	(-) 16.6% (+) 8.3%	41.7%

The process of harmonisation and directional convergence towards best-practice was accelerated by those countries which moved forward and applied more favourable instruments. Both forms of gamma-convergence are apparent in all countries, but the extent to which they occur varies substantially for each indicator. For instance, the 'type of decision-making by regulatory authority', 'type of regulator' and 'dispute settlement' indicators show a high level of positive gamma-convergence, whereas the other four indicators only achieved a moderate or low level of positive gamma-convergence. The extent of the negative gamma-convergence does not vary to the same extent, ranging from 8% to 17% for six of the indicators. Only the 'balancing conditions approved by' indicator showed a moderate level of negative-gamma convergence ,which in conjunction with a moderate degree of positive gamma-convergence results in an overall low value for delta-convergence. Generally, both positive and negative forms of gamma-convergence are found for each indicator, the exception being the 'type of regulator' indicator, for which only positive gamma-convergence was seen.

The low positive gamma-convergence for the 'ratio of national gas consumption to the budget of the national regulator' implies a reluctance by countries to improve the institutional endowment of the regulators. The figures for the indicator describing the ratio of market size to staff hint in the same direction, with a moderate level of positive and a low level of negative gamma-convergence. Similarly, we observe a general reluctance to empower the regulator to decide the capacity allocation rules, as signified by the absence or low value attached to all three types of convergence for Indicator 9.

Previously, we demonstrated that the European legal provisions do not stipulate which authority should be in charge of overseeing the various regulatory functions. Therefore, we thought it unlikely that the legal provisions would induce a high degree of delta-convergence for the polity dimension indicators during our examination (expectation 10). In reality, we found a moderate delta-convergence of 52% for the regulatory competence dimension. However, this was not the case for all indicators, with ex-ante regulation (Indicator 9), dispute settlement (Indicator 12) and type of regulator (Indicator 13) showing a high degree of delta-convergence. The expectation was strongly supported by both the 'capacity allocation rule decided by' and 'balancing conditions approved by' indicators and, to a lesser extent, by the two ratios describing the institutional endowment of the regulator (Indicators 14 & 15).

To sum up, a low precision in European law seems to correspond with a low or moderate delta-convergence since the results show an, albeit relatively weak, correlation. The overall expectation cannot be confirmed in a straightforward manner, but necessitates a more considered answer. Precise European provisions concerning TPA and TPA to storage resulted in a high degree of delta-convergence. Conversely, a low precision in the legal norms resulted in a low degree of convergence in terms of trading facilities, capacity allocation rules and balancing conditions. Imprecise European legal provisions provoked a moderate move towards best-practice with respect to components such as incentive regulation, minimum booking period, gas release programme, and ratios measuring gas consumption relative to staff numbers and budget of the regulator. In terms of opening up the legal market and unbundling measures, the European Commission started out with precise but rather undemanding regulatory targets. The legal market was incrementally opened up with relatively low targets set by the first Directive and reaching only a moderate level of best-practice. The same tendency can be observed

for the unbundling of TSOs and DSOs. Whereas legal unbundling was widely applied, ownership unbundling can only be described as moderate with respect to TSOs and marginal for DSOs.

Any claim of a positive correlation between the precision of the EU legal provisions and a high degree of convergence is weakened by contrary observations. In terms of the publication of DSO accounts, for instance, one finds only a low degree of delta-convergence, despite their publication being unequivocally prescribed in the first Directive. Perhaps surprisingly, several indicators which were not precisely prescribed by the EU law show a move towards best-practice. This is true for components describing network access conditions such as tariff structure, type of capacity booking, UIOLI and balancing; and also for both the dispute settlement and type of regulator indicators. This implies that there must be complementary factors or mechanisms inducing convergence.

To sum up, precision in the regulatory instruments of European provisions is a necessary but not a sufficient condition for achieving convergence towards best-practice. Setting precise and ambitious targets is important since the empirical results show that member states do tend to apply the provisions to the letter rather than just in spirit. Further, the failure to publish accounts emphasises that the effect of law is sometimes related to the degree of law enforcement actions on the European and national levels. The first enforcement cycle on the EU level has begun but these efforts will only be successful if they are accompanied by determined enforcement practices by the regulatory authorities in the member states.

6. The role of the Madrid Forum

Complementing European harmonisation, this transnational communication mechanism helped generate convergence. In the context of European gas reform, the Madrid Forum (MF) functioned as the main instrument for facilitating transnational communication. The combination of framework regulations and a communicative forum is a classical example of applied network governance. According to Kohler-Koch's characterisation of network governance in the European Union, the state functions as activator but, at the same time, a multitude of stakeholders are engaged in reaching functionally-specific agreements cutting across different levels (Kohler-Koch & Eising, 1999: 6). To understand the basic functions of the MF, we will first describe its institutional setting and then estimate the quantitative inputs from different actor groups.

The Madrid Forum first met on 30 September 1999 and has since congregated once or twice a year in Madrid. Most representatives are delegated by the European Commission, the Council of European Energy Regulators (CEER)[21] and national regulatory authorities such as national regulators and involved ministries. In addition, international organisations such as the International Energy Agency and major interest associations[22] such as Eurogas, the Electricity Association Eurelectric, European Federation of Energy

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[21] More recently, the European Regulator's Group for Electricity and Gas (ERGEG) has been formed to complement the CEER and advise the Commission on the regulatory process.

[22] The core participants are Eurogas, the Electricity Association Eurelectric, European Federation of Energy Traders (EFET), International Federation of Industrial Energy Consumers (IFIEC), International Association of Oil and Gas producers, European Chemical Industry Council (ECIC), Gas Transmission Europe (GTE) and consumer groups.

Traders, International Federation of Industrial Energy Consumers, International Association of Oil and Gas producers, European Chemical Industry Council, Gas Transmission Europe (GTE) and consumer groups take part. Depending on the agenda, additional speakers from consulting companies such as OXERA, the Brattle Group or Cambridge Energy Research Associates (CERA) may be invited to bring their expertise to the meeting. The composition of the participants significantly changed in July 2004 due to the enlargement of the EU with ten new member states. Later, candidate countries, neighbouring countries and members of the European Economic Community (EEC) such as Norway were also invited. Although the number of organisations participating increased, the number of participants remained much the same. In the second meeting, in May 2000, 28 organisations participated and in May 2006 (the 11th Meeting) 41 organisations were represented.

The main objective and function of the Madrid Forum is to build a consensus among all the parties involved in the gas reform process. This mechanism has been explicitly created to complement the harmonisation process triggered by European legislation (Madrid Forum, 1999). The Madrid Forum has no decision-making structure, and functions solely as a communication platform. The aim is to decrease the information asymmetry between regulatory authorities and the industry while, at the same time, finding consensual solutions to the very complex regulatory issues. Alongside the information exchange, the Madrid Forum serves as an arena to test arguments, to convince other players and to build coalitions.

The European Commission determines who is accredited and may participate. Moreover, the EC sets the agenda and decides whether revisions to the agenda suggested by participants will be accepted. The only quasi-regulatory decisions to have emerged from the MF have been two sets of guidelines initially adopted by the industry as voluntary codes of conduct. Héritier saw these non-binding, voluntary negotiations by EU social partner organisations on agreements as instruments which could potentially be converted into binding documents that parties would have to comply with (Héritier, 2003). This is exactly what happened with the first set of guidelines. The Guidelines for good practice regarding TPA services, tariff structures and balancing were adopted in February 2002 by all relevant parties. However, compliance was very low(Council of European Energy Regulator (CEER), 2004). On 28th September 2005, this first Guideline was included in Regulation (EC) No 1775/2005 EC of the European Parliament and Council concerning conditions for access to the natural gas transmission networks. Half a year earlier, the second Guideline (Good Practice for Gas Storage System) was adopted. Especially the industry associations have been unhappy with the Guidelines being turned into legal binding regulations, and feel somewhat betrayed as the measures were developed under the premise of voluntariness.

Between September 1999 and October 2007, 13 meetings were held during which industry provided 71% of the input, whereas the representatives of governmental institutions contributed only 28% of total input. The quantitative contribution from external consultants remained marginal. Member States mediate their interests through their European stakeholder associations such as CEER or ERGEG and rarely present or comment directly. One exception has been the UK, whose Department of Trade and Industry gave a presentation on natural gas qualities during the 10th Madrid Forum. The presentation can be seen as an attempt to influence the setting of standards with regard to

natural gas qualities and the regulatory procedures involved. Since the UK has recently become a net importer of natural gas, it now tries to influence the discussions on the harmonisation of gas qualities across Europe which it sees as necessary to ensure the interoperability of European transmission systems. The UK engagement should be considered in the context of the ongoing debate on harmonising gas qualities across Europe, and so ensuring the interoperability of European transmission systems. In general, the UK appears to be leading the way in dealing with different gas qualities but, at the same time, the DTI is trying to steer the standards towards their own norms as opposed to those on the continent. Such attempts endeavour to lower technical and political adaptation costs at home.

Table 3 shows that the inputs from non-state actors accounts for two-thirds of the total input to the Madrid Forum. Consequently, the Forum mainly functions as a platform where industry associations can address their concerns vis-à-vis the regulatory authorities.

Table 3: Input by actor group to Madrid Forum (1999-2007)

	Governmental institutions	Industry	External Consultancies
MF1	1	0	1
MF2	4	15	
MF3	4	17	1
MF4	2	16	1
MF5	10	15	1
MF6	7	13	1
MF7	7	22	
MF8	6	30	
MF9	6	16	
MF10	7	19	
MF11	23	47	
MF12	15	18	
MF13	8	20	
Total input	**100**	**248**	**5**

Sources: Website of the European Commission, Directorate-General
for Energy and Transport, http://ec.europa.eu/energy/
gas/madrid/index_en.htm

The activities of industry and regulatory authorities peaked at the 11th Madrid Forum in May 2006, after the end of our detailed examination period. The increased engagement by all parties in that meeting can be explained by two circumstances. Firstly, industry actors wanted to actively participate in the formulation of interpretive notes to Regulation 1775 on the basis of which the implementation would most likely be assessed, and this meeting of the Madrid Forum took place shortly before the implementation deadline. The timing and content of the meeting suggests that they perceived the formulation of

interpretative notes as a process of subsidiary standard setting. Secondly, the second set of Guidelines was on the same agenda, concentrating on issues related to Gas Storage Systems. Having experienced how voluntary guidelines could be turned into legally binding Regulations, the interest groups wanted to be seriously engaged in the process of drawing up new guidelines within the Madrid Forum. Unlike framework regulations, Regulations do not require national consultation and decision-making, and are directly applied within the member states. This demonstrates how changes in modes of governance can trigger inputs and promote the transnational mechanism. The Madrid Forum, at least temporarily, became the main platform for exchange and lobbying.

Measuring the quantitative inputs of the various actor group enables one to illustrate the extent to which regulatory authorities use transnational mechanisms to decrease the information asymmetry between themselves and industry actors. One should interpret the presentations and comments not only as preference statements, but also as part of in-depth discussions on regulatory tools and their possible effects from which the involved actors learn from each other. Nevertheless, statements are interest-driven and information presented is selective. The industry's involvement and contributions within the transnational mechanism have been criticised for ensnaring regulatory authorities. Rather than over-relying on expertise from industry, critics emphasise the need for regulatory authorities to be equipped with sufficient resources and human competences to overcome information asymmetry and so be in a position to pursue regulatory interests.

The most prominent initiative in promoting a specific regulatory instrument in the Madrid Forum has concerned the entry-exit system on which the tariff structure and the capacity allocation is based. This has demonstrated that it clearly makes a difference whether the EC defines a clear preference in the first place and, secondly, whether it actively promotes its preference within the Forum.

As far back as 2001,

> the Regulators, the Commission and most member states expressed serious doubts that distance-related point-to-point tariffs would effectively achieve this and therefore invited Regulators, Member States, GTE, and individual TSOs to consider more cost-reflective and trade-promoting tariff systems such as entry-exit systems. (Madrid Forum, 2001: 3)

The coalition of entry-exit proponents received support from the Brattle Group's contributions on tariff methodologies. The Brattle Group's expertise considerably strengthened the pro-entry-exit coalition and provided the arguments to promote a particular tariff structure. The intense discussion on the pros and cons of entry-exit systems resulted in some countries being persuaded to move ahead and apply best-practice. Later, the general acceptance of entry-exit tariffs resulted in the presentation of a report documenting the implementation of "a road-map to entry-exit systems" (Madrid Forum, 2004: 3). By the end of 2005, nine out of the twelve reviewed countries were moving towards entry-exit based tariffs. Other features of network access conditions and tariffication have been widely discussed in the Forum and also resulted in high convergence. The application of incentive regulations was introduced later but was less prominently promoted by the Commission. In contrast to the convergence towards entry-exit, incentive regulation was less applied and reached only approximately 42% of delta-convergence.

The first impression gained is that transnational communication within the Madrid Forum does, under certain conditions, promote convergence towards best-practice. This rather intuitive interpretation cannot replace a substantial analysis, which would control for other factors. Quantitative reasoning, based on the inputs of actor groups, cannot explain the influence of transnational communication, in the context of the MF, on the member states' regulatory choices. Rather, qualitative considerations are required. However, it is very difficult to trace the input of an actor or an actor group back to analyse how this was processed in the Forum and how it eventually affects implementation in member states. Differential analysis is complicated and, methodologically, would require the application of process tracing or some similar technique.

7. Conclusions

The empirical results suggest only a moderate convergence towards best-practice. As expected, delta-convergence, on the regime level, was only moderate at 54%. Distinguishing between positive and negative gamma-convergence allowed us to show that gas market liberalisation is not a one-way street leading to best-practice. Rather, we saw how member states revise their regulatory choices in both directions. As to the impact of law, the specification of European provisions is reflected in the applied level of best-practice. Although a correlation does exist, it was considerably weakened by a number of contrary observations. Several indicators, mainly describing the network access conditions and tariffication, did show a high delta-convergence despite the regulatory instruments not having been prescribed by European law. Instead, these indicators seem to have been prominent features of transnational communication in the Madrid Forum. Although this does not prove nor measure the impact of the mechanism, it alludes to it effectiveness. An assessment of the quantitative inputs by the various actor groups revealed that the Madrid Forum is a platform where the industry dominates the feeding in of statements, reports and studies. Although member states are individually represented, their contributions are mediated by their supranational organisations. The impact of transnational communication through the Madrid Forum in general, and the role of the non-state actors in particular, on regulatory design choices is difficult to determine and would require qualitative case studies that include process tracing and take account of the multiple factors involved. In particular, the absence of decisions and decision-making rules in the MF makes it difficult to assess the impact of non-state actors on regulatory regimes. As it stands, the Madrid Forum remains something of a black box, and the processes of learning and diffusion triggered within it would benefit from further research in the near future.

References

Arentsen, M. (2004). Politics and Regulation of Gas in Europe. In D. Finon & A. Midtun (Eds.), *Reshaping European Gas and Electricity Industries. Regulation, Markets and Business Strategies* (pp. 69-109). Amsterdam: Elsevier.

Arthur D. Little. (2007, July 2007). West European Gas Transmission Tariff Comparisons. Retrieved July 26, , from http://www.gastransportservices.com/content/documents/publications/studies/573062.pdf

Bain, J. (1968). *Industrial Organisation* (2nd ed.). New York.

Busch, A. (2002, 25-26 May 2002). *Divergence or Convergence? State Regulation of the Banking System in Western Europe and the United States.* Paper presented at the Workshop on Theories of Regulation, Nuffield College, Oxford.

Christensen, T., & Leargreid, P. (2007). Agencification and Regulatory Reforms. In T. Christensen & P. Leargreid (Eds.), *Autonomy and Regulation. Coping with Agencies in the Modern State* (pp. 8-49). Cheltenham, UK, Northampton, USA: Edward Elgar.

Council of European Energy Regulator (CEER). (2004). Monitoring Report 2004 concerning Compliance with the Guidelines for the Good Third Party Access Practice to Gas Transmission Systems (pp. 130).

Crocker, K., & Masten, S. (1996). Regulation and Administrated Contracts Revisited: Lessons from Transaction-Cost Economics for Public Utility Regulation. *Journal of Regulatory Economics, 9*, 5-39.

Dixit, A. (1996). *The making of Economic Policy*. Cambridge/Massachusetss, London/England: MIT Press.

Eising, R. (1999). Reshuffling power: the liberalisation of the EU electricity markets and its impact on the German governance regime. In B. Kohler-Koch & R. Eising (Eds.), *The Transformation of Governance in the European Union* (pp. 208-229). London, New York: Routledge.

European Commission. (2005). Regulation (EC) No 1775/2005 of the European Parliament and of the Council of 28 September on conditions for access to the natural gas transmission networks (Official Journal of the European Union ed., Vol. Regulation (EC) No. 1775/2005, pp. L289/281-213): Official Journal of the European Union.

European Commission. (2006). Europa Glossary. Retrieved 18 December, from http://europa.eu/scadplus/glossary/

European Commission. (2006, 12.9.2006). EUR-Lex – the portal for European law. Retrieved June 2, 2006, from http://europa.eu/scadplus/glossary/community_law_en.htm

Falkner, G., Hartlapp, M., Leiber, S., & Treib, O. (2005). *Complying with Europe? The Impact of EU Minimum Harmonisation and Soft Law in the Member States*. Cambridge Cambridge University Press.

Frant, H. (1991). The New Institutional Economics: Implications for Policy Analysis. In H. Frant (Ed.), *Policy Analysis and Economics: Developments, Tensions, Prospects* (pp. 111-125). Boston: Kluwer Academic Publishers.

Genoud, C. (2001). *Privatization and Regulation: the Case of European Electricity* (Vol. 196). Lausanne: L'Université de Lausanne.

Genoud, C., & Finger, M. (2004). Electicity Regulation in Europe. In D. Finon & A. Midtun (Eds.), *Reshaping European Gas and Electricity Industries. Regulation, Markets and Business Strategies* (pp. 29-68). Amsterdam: Elsevier.

Glachant, J.-M. (2002). Why Regulate Deregulated Network Industries?*, 3*(15), 297-311

Haase, N. (2008). European gas market liberalisation: Are regulatory regimes moving towards convergence? [Electronic Version]. *Oxford Institute for Energy Studies*, from http://www.oxfordenergy.org/pdfs/NG24.pdf.

Haverland, M. (2000). National adaption to European integration: the importance of institutional veto points. *Journal of Public Policy, 20*, 83-103.

Heichel et. al. (2005). Is there convergence in convergence research? An overview of empirical studies on policy convergence. *Journal of European Public Policy, 12*(5), 817-840.

Héritier, A. (1995). 'Leaders' and 'laggards' in European clean air policy. In F. V. Waarden & B. Unger (Eds.), *Convergence or Diversity? Internationalization and Economic Policy Response* (pp. 278-305). Avebury: Aldershot.

Héritier, A. (2003). New modes of governance in Europe: increasing political capacity and policy effectiveness. In T. A. Börtzel & R. A. Cichowski (Eds.), *The State of the European Union* (pp. 105-126). Oxford Oxford University Press.

Héritier, A., Kerwer, D., Knill, C., Teutsch, M., & Douillet, A.-C. (2001). *Differential Europe: New opportunities and restrictions for policymaking in the member states.* . Lanham, MD: Rowman and Littlefied.

Holzinger, K., & Knill, C. (2005). Causes and conditions of cross-national policy convergence. *Journal of European Public Policy, 12*(5), 775-796.

International Gas Union (Ed.). (2006). *The paradigm change in international gas markets and the impact on regulation.* The Hague: International Gas Union/The Clingendael Institute.

Jabko, N. (2004). The political foundation of the European regulatory state. In J. Jordana & D. Levi-Faur (Eds.), *The Politics of Regulation. Institutions and Regulatory Reforms for the Age of Governance.* (pp. 200-217). Cheltenham, UK Northhampton, USA: Edward Elgar.

Jordan, A. (2005). Policy convergence: a passing fad or a new integrating focus in European Studies? *Journal of European Public Policy, 12*(5), 944-953.

Jordana, J., & Levi-Faur, D. (2004). The Politics of Regulation in the Age of Governance. In *The Politics of Regulation: Institutions and Regulatory Reforms for the Age of Governance* (pp. 1-28). Cheltenham, UK, Northampton, USA: Edward Elgar.

Knill, C. (2005). Introduction: Cross-national policy convergence: concepts, approaches and explanatory factors. *Journal of European Public Policy, 12*(5), 764-774.

Kohler-Koch, B. (1999). The Evolution and Transformation of European Governance. In B. Kohler-Koch & R. Eising (Eds.), *The Transformation of Governance in the European Union* (pp. 14-38). London: Routledge.

Kohler-Koch, B., & Eising, R. (Eds.). (1999). *The Transformation of Governance in the European Union*. London: Routledge.

Levi-Faur, D. (2003). The politics of liberalisation: Privatisation and regulation-for-competition in Europe's and Latin America's telecoms and electricity's industries. *European Journal of Political Research, 42*(5), 705-740.

Macher, J., & Richmann, B. (2006). Transaction Cost Economics: An Assessment of Empirical Research in the Social Sciences. *Duke Law School Legal Studies Research Paper Series*(115), 1-83.

Madrid Forum. (1999). *Conclusions of the 1st meeting of the European Gas Regulatory Forum*. Madrid.

Madrid Forum. (2001). *Conclusions of the 4th meeting of the European Gas Regulatory Forum*. Madrid.

Madrid Forum. (2004). *Conclusions of the 8th meeting of the European Gas Regulatory Forum*. Madrid.

Majone, G. (1996). Regulation and its Modes: The European Experience. *International Journal of Public Administration 19*(9), 1597-1637.

Majone, G. (1998). The Rise of the Regulatory State in Europe In R. Baldwin, C. Scott & C. Hood (Eds.), *A Reader on Regulation* (Vol. 17, pp. 192-215). Oxford: Oxford University Press.

Mastenbroek, E. (2007). *The politics of compliance. Explaining the transposition of EC directives in teh Netherlands*. Universiteit Leiden, Leiden.

Molle, W. (2006). *The Economics of European Integration. Theory, Practice, Policy*. Aldershot: Ashgate Publishing Limited.

Moran, M. (2002). Review Article: Understanding the Regulatory State. *British Journal of Political Science, 32*, 391-413.

Radaelli, C. (2000). Policy Transfer in the European Union: Institutional Isomorphism as a Source of Legitimacy. *Governance: An International Journal of Policy and Administration, 13*(1), 25-43.

Radaelli, C. (2005). Diffusion without convergence. How political context shapes the adoption of regulatory impact assessment. *European Journal of Political Research, 12*(5), 924-943.

Scott, C. (2004). Regulation in the age of governance: the rise of the post-regulatory state. In J. Jordana & D. Levi-Faur (Eds.), *The Politics of Regulation. Institutions and Regulatory Reforms for the Age of Governance* (pp. 145-176). Cheltenham, UK, Northampton, USA: Edward Elgar.

Spanjer, A. (2006). European Gas Regulation: A change of focus. *Department of Economics Research Memorandum 2006.04* Retrieved 20 December, 2006, from http://www.law.leidenuniv.nl/general/img/AS2006%2E03_tcm11-12504.pdf

Spanjer, A. (2007, 18-21 February). *Do TPA exemptions Solve the Hold-up Problem on European Gas Markets?* Paper presented at the Papers and Proceedings of the 30th Conference of the Internationa Association for Energy Economics, Wellington, New Zealand.

Treib, O., Bähr, H., & Falkner, G. (2007). Modes of governance: towards a conceptual clarification. *Journal of European Public Policy, 14*(1), 1-20.

Warntjen, A., & Wonka, A. (Eds.). (2004). *Governance in Europe. The Role of Interest Groups*. Baden-Baden: Nomos Verlagsgesellschaft.

Williamson, O. E. (1997). Transaction economics and public administration. In P. Boorsma, K. Aarts & A. Steenge (Eds.), *Public Priority Setting: Rules and Costs*. Dordrecht: Kluwer Academic Publishers.

Williamson, O. E. (1998). Transaction cost economics: How it works; where it is headed. *De Economist 146*(1), 23-58.

Williamson, O. E. (1999). Public and Private Bureaucracies: A Transaction Cost Economic Perspective. *Journal of Law, Economics and Organization, 15*(1), 306-342.