Charting the Gaps:
EU regulation of gas transmission tariffs in the Netherlands and the UK

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Preface

The Dutch and British gas markets are among the largest in the Europe and therefore the way in which these two countries have chosen to organise third party access to networks is extremely significant. The differences of approach between EU countries, even those which have embraced liberalisation and third party access with relative enthusiasm, are a matter of great importance to the success of the evolution of a single European gas market. For these reasons this paper on the "gaps" between the Dutch and the British approach is a welcome contribution to the Natural Gas Programme's work on European gas liberalisation following the papers by: Lohmann on Germany, Haase on regulatory regimes, Cavaliere on Italy and Hunt on entry-exit tariffs. The fact that this publication sets out the evolution of the Dutch tariffication methodology using original sources, is a particularly important contribution to the literature on European gas liberalisation.

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1 Abstract

After over a decade of politically sensitive regulatory development regarding third party access tariffs, cost-reflectivity became the European tariffication principle and entry–exit the structure of choice. The Netherlands and the UK are often cited as examples of good implementation of European regulation. This paper analyses the three key regulatory questions that need to be answered:

- *which costs* are *reflected*
- *how are they reflected* in the total revenue requirement
- *how is this revenue requirement allocated to shippers*

This paper then establishes that these questions are answered very differently in the Netherlands and in the UK. If the advanced implementation of the same set of EU regulations can lead to two different systems in two different countries, the EU regulation clearly fails to streamline regulation. Depending on the regulatory objectives pursued, streamlining regulation may be necessary and renewed regulatory efforts are required. In doing so, the way in which the three key questions are answered is vital.

2 Introduction

In November 2007, after over ten years of gas market integration, the European Commission acknowledged that *'a regulatory gap remains on cross-border issues'*.[2] Gas transmission regulation consists of two key areas:

- Structural regulation relates to the structure of the players, for example in terms of the independence of – and relationships between – gas companies, their subsidiaries and the body exercising regulatory oversight.
- Conduct regulation takes this structure as given and regulates the behaviour of the players, including regulation of tariffs – and conditions for third party access (TPA) – to transmission capacity.[3]

Gaps could occur in two situations. The first is when European regulation leaves so much to the national level that the achievement of European regulatory goals can be hampered as a result of different implementation in different Member States. The second type of gap can be called a *gap between regulations.* Such a gap exists when the transmission of gas between two geographic areas that are governed by different regulatory systems is not regulated, and the absence of sufficient regulation impedes the achievement of stated regulatory goals. This may especially be the case when exemptions have been granted for cross-border transmission. The focus of the present analysis is on gaps of the first category. To many readers, the word 'gap' may have negative connotations. The primary purpose of this paper is, however, to identify the gaps which exist and how they evolved, not to argue whether or how they should be filled, as these issues would need a separate paper.

TPA tariffs are much debated. A number of distinctions are in place. 'Transmission' is the transportation of natural gas through a network of high pressure pipelines, excluding both the transportation through upstream pipelines – those connecting the liquefied natural gas (LNG)

[2] European Commission, (2007), 'Proposal for a Regulation establishing an Agency for the Cooperation of Energy Regulators', COM/2007/0530, sub 3.1.
[3] Madrid Forum, (1999), 'Minutes of the 1st Forum meeting 30 September–1 October 1999'. Available at: http://ec.europa.eu/energy/gas/madrid/doc_1/minutes_1st_forum.pdf, p 1–2.

terminal or production field to the pipeline grid – and those used for local distribution.[4] 'Transit' is a type of transmission that has been regulated separately in the past. It is the transportation between grids in separate geographic areas.[5]

The 'core access tariff' should be understood not to include the costs for ancillary services, such as storage, line pack, or balancing costs. This is not to deny either the importance of these issues, or the potential for their abuse for the purpose of discrimination. Balancing charges can, for example, be used to this end. Since new entrants generally have less access to flexibility through storage or flexible production, they are more likely to need balancing services. Extravagant charges therefore benefit incumbents.[6] Balancing rules thus constitute an important problem, of which the complexity alone is the reason for exclusion from this analysis.

Transmission system operators (TSOs) can diversify access products in two ways. First, by varying the duration of the time for which access is granted. Second, by affecting the probability that the transmission will be interrupted. No delivery is certain, but 'firm' capacity provides close to that service, whereas 'interruptible' is what the name suggests. Different combinations of access conditions merit different tariffs. At least in theory, access products are similar to most other goods in that they can be negotiated on an individual basis, priced at a regulated tariff, sold on by the buyer, or traded in another way. They do not include property rights of the transmitted gas.

Underpinning the access tariff's calculation are a tariffication principle and structure. The principle is used to determine the total revenue requirement. Usual principles are that: tariffs should be based on costs, yield a certain rate of return, or be established through benchmarking. The tariff structure allocates to each shipper his fair share of the total revenue requirement.

[4] Art 2, paragraph 1, 1775/2005/EC.
[5] Art 2, paragraph 1, 91/296/EEC.
[6] European Commission (2003), 'Second Benchmarking Report on the Implementation of the Internal Electricity and Gas Market'. Available at: http://ec.europa.eu/energy/gas/benchmarking/doc/2/sec_2003_448_en.pdf, p 72.

Four main tariffication structures (and their variations) have emerged:

- Under a postal system, the regulated area is divided into tariff areas, after which a set amount is charged for the transmission of any volume from and to any point within the tariff area.
- A distance-based tariff is a charge for used or booked capacity based on the distance over which the gas is transmitted.
- Under a point-to-point system, a specific tariff is quoted for transmission between points, although for practical reasons not necessarily all possible combinations are quoted.
- The fourth, entry–exit, is a variation on the point-to-point system where the tariff is quoted for a given number of pre-specified entry – and exit – points. All possible combinations of entry and exit tariffs would together constitute a complete point-to-point matrix.[7] However, from a point-to-point matrix, uniform entry and exit tariffs cannot *necessarily* be calculated, as a uniform tariff for entry or exit at each point does not need to underpin the matrix calculation.

Tariff structures are different from capacity structures. Capacity can be available on a point-to-point basis, whereas the usage charge is based on the postal system. Analogously, although a traveller on the London underground travels between two – usually – pre-specified points, he pays a uniform 'postalised' tariff within the tariff zone. Although not all tariffication structures developed in the context of gas transmission would be directly applicable to underground travel, the example illustrates that the structure of tariffication can differ from that of the capacity for physical transport booked.

Combining different principles with different structures leads to different costs and incentives. In order to establish whether regulatory gaps exist, the regulatory framework should be evaluated at a European level. Then, economic analysis can help identify some of

[7] Energy Charter Treaty Secretariat (2006), 'Gas Transit Tariffs: in selected Energy Charter Treaty countries'. Available at: www.encharter.org/fileadmin/user_upload/document/Gas_Transit_Tariffs_-_2006_-_ENG.pdf, p 31–4.

the potential regulatory gaps. These need not necessarily be restricted to cross-border issues, but could extend beyond the regulatory gaps identified by the European Commission. Our case study of the Netherlands and the UK illustrates some implications in practice.

3 EU Framework: sector specific regulation

Certain transmission companies have been described to have *'mounted a ferocious defence of the status quo in their own countries and in Brussels'*[8] in response to the process of liberalization. Some found much support in the Member States they operate in. Although gradually declining in strength, this opposition has continued, and continues to haunt and impede market integration. It is therefore no surprise that especially, but not exclusively, the initial regulatory documents were limited in scope and efficacy.

3.1 Transit Directive

Under the 1991 Directive on the transit of natural gas through grids,[9] access tariffs were negotiated by shippers and the TSO, provided they were fair and non-discriminatory and did not endanger security of supply or the quality of service.[10] The scope of the Directive was limited to transmission between grids,[11] leaving within-grid tariffs unregulated at the European level. The European Commission was informed of access requests and the success or failure to reach agreement within 12 months.[12] It also chaired the conciliation committee to which parties could refer.[13] The Directive stipulated that the Commission would use its powers under Community Law – for example under competition law[14] – if the reasons for failure of negotiations appeared unjustified or insufficient.[15] However, notwithstanding some specific case, it was not until 2005, and with enhanced powers,[16] that the Commission started

[8] Stern, J.P., (1998), *Competition and Liberalization in European Gas Markets: a diversity of models'*, London: Royal Institute of International Affairs, p 173.
[9] 91/296/EEC.
[10] Art 3, paragraphs 1 and 2, 91/296/EEC.
[11] Art 2, paragraph 1, 91/296/EEC.
[12] Art 3, paragraph 3, 91/296/EEC.
[13] Art 3, paragraph 4, 91/296/EEC.
[14] 62/17/EEC.
[15] Art 4, paragraph 4, 91/296/EEC.
[16] 2003/1/EC.

a major investigation into the energy market.[17] It is also important to note in this respect that it was the Directorate General for Competition 'DG Comp' that undertook this investigation, whereas it had been the Directorate General for Energy and Transport 'DG Tren' that had led the efforts before the investigation. With this, it became apparent that competition law would become more important to EU energy regulation.

3.2 The First Directive

A further step towards integration was taken with the First Directive,[18] which complemented the 1991 Directive. Rather than prescribing a uniform tariffication system, the diversity of national gas markets and the resulting regulatory needs was taken into account.[19] Contrary to the technical rules, which had to ensure transparency and interoperability, tariff regulation was less ambitiously called 'basic', leaving much to the national level.[20] Regulation was extended to all transmission.[21] The fact that obstacles to further market integration remained after implementation was expressly accepted.[22] Also this Directive bears the scars of political difficulties relating to European gas market integration, since what may be straightforward from a regulatory perspective may be much more difficult in political terms.

Under the First Directive, tariffs had to be objective, transparent and non-discriminatory. Member states could choose a system of either negotiated or regulated access.[23] The first system – which allows negotiated access – leaves parties to come to voluntary commercial agreements. Member states had to take the necessary measures to enable gas companies and customers who were eligible to switch suppliers, to negotiate for capacity. These measures included TSO obligations to publish general terms of access.[24] Tariffs then vary, as they depend on parties' bargaining positions. Regulated access means the national regulatory authority (NRA), or any other body with the power of regulatory oversight, sets a tariff which

[17] European Commission, (2005), 'Competition: Commission opens sector enquiry into gas and electricity', Press release IP 05/716, Available at: http://europa.eu/rapid/pressReleasesAction.do?reference=IP/05/716&format=HTML&aged=1&language=EN&guiLanguage=en.
[18] 98/30/EC.
[19] Recital 24, 98/30/EC.
[20] Recitals 9, 19 and 20, 98/30/EC.
[21] Art 1, 98/30/EC.
[22] Recital 32, 98/30/EC.
[23] Art 14 98/30/EC.
[24] Art 15 98/30/EC.

is published and applied to all shipments.[25] As tariffs are set exogenously, excessive demand is not solved through tariff rises; capacity allocation in such cases needs regulation of congestion management.

Although both models prescribe tariffication procedures, any combination of principles and structures could be the outcome of the process. Under this European framework, regulatory differences between Member States almost inevitably occur, and potentially impede competition. The Directive did prescribe accounting separation, which had to ensure that if cost data was used it would not lead to distortions of competition, in particular not through cross-subsidization.[26] The option of one management structure or company being involved in both shipping and operating the network was not ruled out.

TSOs had to make known to other TSOs the information needed for secure and efficient operation of the system.[27] They had to maintain the confidentiality of sensitive information disclosed to them, and were prohibited from using such information themselves in the context of sales or purchases by the establishment of so-called 'Chinese walls'.[28] This limitation seems of only partial efficacy, especially when the management structure operating the network also arranges the company's own gas flows.

Reflecting difficulties of transition for various parties,[29] the Directive contains the option that derogations be granted under certain circumstances. It allowed Member States to grant a temporary derogation to companies that would face serious economic and financial difficulties as a result of take-or-pay commitments.[30] In addition, it exempted both Member States relying for more than 75 per cent on one external supplier while not being connected to the interconnected system,[31] and emergent markets[32], from various provisions of the Directive, provided strict conditions regarding, *inter alia,* the effect of the derogation on competition were met.

[25] Art 16 98/30/EC.
[26] Art 13, 98/30/EC.
[27] Art 7, paragraph 3, 98/30/EC.
[28] Art 8, 98/30/EC.
[29] Recitals 2, 29, 30 and 31, 98/30/EC.
[30] Art 25, 98/30/EC.
[31] Art 26, paragraph 1, 98/30/EC.
[32] Art 26, paragraph 2, 98/30/EC, a market is 'emergent' if the first commercial supply of its first long-term natural gas supply contract was made not more than ten years earlier, Article 2, paragraph 24, 98/30/EC.

3.3 Guidelines for Good Practice

In 1999, soon after publication of the First Directive, the European Commission organized the Madrid Forum. Like its older sister – the Florence Forum on electricity – it was meant as an informal EU level framework where NRAs and a wide variety of stakeholders could meet and discuss issues relating to the ongoing process of market integration. Access tariffication was one of the key issues on the agenda.[33]

The Madrid process should be seen in the light of the political difficulties that led the First Directive to leave the gaps that the Forum exists to fill. In addition to the Commission, industry, Member States and regulators were represented. Nevertheless, the Forum dynamics should not be seen as solely consensus-based. On one hand, the outcomes of the Forum are not binding for parties. This means that there is more room for consensus. On the other hand, the Commission plays a double role. Given the Commission's powers under competition law, parties that block the market integration process could lose more than consensus in the context of the Forum would cost them. Moreover, the options of disagreement being evened out through further legislation, for instance by means of the comitology procedures[34] or by codification of any consensus reached, were not ruled out.[35] The Forum has for this reason been called ambiguous.[36] Nevertheless, it continued to meet on a yearly to twice-yearly basis in the period to 2008. The formal regulatory procedures on the one hand, and the Forum on

[33] Madrid Forum, (1999), 'Minutes of the 1st Forum meeting 30 September–1 October 1999'. Available at: http://ec.europa.eu/energy/gas/madrid/doc_1/minutes_1st_forum.pdf.

[34] Under this procedure the council sets up a committee to oversee the Commission. This means that other bodies next to the European Commission may become important in the regulatory process. See, for a more elaborate discussion of this procedure and in particular the powers of the Council and Parliament vis-à-vis the European Commission: Ballman, A [et al.], 'Delegation, Comitology, and the Separation of Powers in the European Union', *International Organization*, Vol. 56, No. 3 (Summer, 2002), pp. 551–74.

[35] Eberlein, B., (2005), 'Regulation by Cooperation: the "Third Way" in Making Rules For the Internal Market', in Cameron, P.D. (ed.), *Legal Aspects of EU Energy Regulation: Implementing the New Directives on Electricity and Gas Across Europe*, Oxford: OUP, pp 81–2.

[36] Cameron, P.D., (2005), 'Completing the Internal Market in Energy: An Introduction to the New Legislation', in Cameron, P.D. (ed.), *Legal Aspects of EU Energy Regulation: Implementing the New Directives on Electricity and Gas Across Europe*, Oxford: OUP, pp 33–4.

the other, are complementary.[37] At times when issues cannot be resolved through the formal regulatory channel due to disagreements, it is in the Forum context that discussion takes place.[38] However, the regulatory co-evolution is not always so clear cut. At times the two processes work independently, as can be seen in the context of the Second Directive, which was adopted in the middle of important changes in the Madrid process and was therefore neither a reaction to the outcome of the consensus-based change, nor the resolution of deadlocked negotiations.[39]

In the context of the Forum, representative bodies of both NRAs and TSOs emerged. The NRAs formed the Council of European Energy Regulators (CEER),[40] whereas TSOs came together in Gas Transmission Europe (GTE).[41] Against the backdrop of the regulatory uncertainties left by the First Directive, further steps were taken within the context of the Forum. The Commission requested the Brattle Group, a consulting firm, to perform a study of tariffication methodologies ('the first Brattle Report'),[42] whereas both CEER and GTE contributed through a series of presentations and position papers. In 2002, at the Forum's fifth meeting, a set of Guidelines for Good Practice (GGP) was agreed upon.[43]

The main clarification brought by the GGP regards the First Directive's principle[44] of objective, transparent, and non-discriminatory procedures. According to the GGP, this means that information should be published regarding at a minimum:[45]

- tariff methodology and structure
- definition of the cost base, if relevant for the tariff

[37] Haase, N., (2008), 'European Gas Market Liberalisation: are regulatory regimes moving towards convergence?', Oxford: OIES. Available at: www.oxfordenergy.org/pdfs/NG24.pdf, p 2.
[38] Ibid. p 24.
[39] 2003/55/EC; Madrid Forum, (2003), 'Conclusions of the 7th meeting of the European Gas Regulatory Forum Madrid 24–25 September 2003'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-7/00_madrid7_conclusions.pdf.
[40] Introduction to European Energy Regulators. Available at: www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_ABOUT
[41] Introduction to Gas Infrastructure Europe. Available at: www.gie.eu.com/_framemid.htm
[42] Brattle Group, (2000), 'Methodologies for Establishing National and Cross-border Systems of Pricing of Access to the Gas System in Europe'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-2/methodologies.pdf
[43] Madrid Forum, (2002), 'Conclusions of the 5th meeting of the European Gas Regulatory Forum Madrid 7–8 February 2002'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-5/conclusions_madrid5.pdf
[44] Article 14, 98/30/EC.
[45] Madrid Forum, (2002), 'Conclusions of the 5th meeting of the European Gas Regulatory Forum Madrid, 7–8 February 2002'. Available at:http://ec.europa.eu/energy/gas/madrid/doc-5/conclusions_madrid5.pdf, p 12.

- functional allocation and capacity/commodity allocation principles
- tariff elements, including charges for capacity overrun and their derivation
- indexation or variation of tariffs
- backhaul transportation or other services, if any
- regulatory involvement in tariff setting.

Thus a significant step was taken to improve transparency of the process. However, rather like the Directive, the equality provided is of a procedural, rather than material, kind. Although the latter may follow from the former, the TSO could, in theory, still employ any published discriminatory tariff within the limitations of the Directive. The Brattle Report had advised that to respect the principle of non-discrimination, '*tariffs should reflect costs in a broad sense'*.[46] The GGP ensured that the information needed to establish whether this goal was achieved was available, but nonetheless did not guarantee non-discrimination through cost-reflectivity.

A rather modest attempt at enhancing material equality was made regarding cross-border trade. TSOs should seek convergence of charging principles and tariff structures where differences hamper such commerce.[47] Thus the recommendation from the Brattle Report that, *inter alia,* incumbents, NRAs and third parties should all work together to reach agreement regarding further harmonization,[48] was not adopted: the burden of regulatory convergence was left with the TSO.

A set of tariffication principles, including one that they should be cost-reflective, was discussed by the Forum.[49] The question of which costs should be taken into account, and how they are to be calculated and passed on to consumers, is still left open. However, even on the principle there was no consensus. The minutes state that one member state argued that in the

[46] Brattle Group, (2000), 'Methodologies for Establishing National and Cross-border Systems of Pricing of Access to the Gas System in Europe'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-2/methodologies.pdf, p 29.
[47] Madrid Forum, (2002), 'Conclusions of the 5th meeting of the European Gas Regulatory Forum Madrid, 7–8 February 2002'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-5/conclusions_madrid5.pdf, p 12.
[48] Brattle Group, (2000), 'Methodologies for Establishing National and Cross-border Systems of Pricing of Access to the Gas System in Europe'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-2/methodologies.pdf, p 62.
[49] Madrid Forum, (2002), 'Conclusions of the 5th meeting of the European Gas Regulatory Forum Madrid, 7–8 February 2002'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-5/conclusions_madrid5.pdf, p 2.

case of effective pipeline-to-pipeline competition, tariffs did not need to be cost-reflective.[50] This may explain why, under the GGP, information regarding the cost base is only to be published *if relevant for the tariff*. As a result of similar political challenges that precluded the First Directive from establishing uniform tariffication principles, this is left to the national level.

The first Brattle Report had left the issue of the tariff structure rather open, and chiefly recommended that the issue was resolved with a view to achieving cost-reflectivity.[51] However, during the fifth meeting, a coalition was formed between the CEER, the Commission, consumer organizations, traders and GEODE, which is a collective of distribution companies. They proposed entry–exit tariffication as the European standard, suggesting that this can in practice – in the case of unidirectional and linear transmission – equal point-to-point tariffication, although it is different in principle. The minutes of the meeting reflect the political divide between this coalition and GTE, which argued against the proposal, recommending instead that the tariff structure should be chosen on a case-by-case basis at the national or regional level.[52]

The publication requirements in the GGP should be seen in the light of the political impossibility of reaching consensus on the much more important issues of tariffication principles and structures.

3.4 Second Directive

The European Commission reported the level of compliance with the GGP to the sixth meeting of the Madrid Forum. Progress had been made, but was uneven and sometimes unsatisfactory. Part of this was blamed on a lack of clarity in the GGP.[53] It also presented a

[50] Ibid, p 3.
[51] Brattle Group, (2000), 'Methodologies for Establishing National and Cross-border Systems of Pricing of Access to the Gas System in Europe'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-2/methodologies.pdf, p 9–10.
[52] Madrid Forum, (2002), 'Conclusions of the 5th meeting of the European Gas Regulatory Forum Madrid, 7–8 February 2002'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-5/conclusions_madrid5.pdf, p 3.
[53] DG TREN, (2002), 'Guidelines for Good Practice – Gas TPA: Compliance Overview'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/complianceguidelines.pdf, p 4.

draft of the second version of the guidelines: GGP 2.[54] The Forum invited the Commission to set up a working group with the various stakeholders to adapt the Commission's proposed version of GGP 2, and to present that to the seventh meeting.[55] This working group's work followed the publication of a second report from the Brattle Group ('the second Brattle Report') that rests on the assumption that the tariffication principle should, in line with the first report, be cost-reflective, and proposes entry–exit structures.[56]

However, even before the working group could report to the Forum, a Second Directive was adopted by the European Parliament and Council, thus illustrating the dual nature of the regulatory process.[57] Although published in a consolidated version, it contains a set of adaptations to the First Directive, while simultaneously repealing the 1991 Directive.[58] Member states were required to set up an NRA which was to be independent of the interests of the gas industry. Among other tasks, the NRA oversees the unbundling of accounts in order to prevent cross-subsidization, and prescribes or approves the access tariff, or at least the methodology used to calculate it.[59] In Germany, where the establishment of a designated NRA had long been resisted, such a body was ultimately set up as a result of these developments.[60]

Much was also done to enhance the independence of the TSO from subsidiaries. In addition to the accounting separation already required under the First Directive,[61] the TSO has to be independent in terms of its legal form, organization and decision making. Ownership unbundling was however still not required.[62] The accounting separation prescription was further enhanced by requiring the auditor to verify that no cross-subsidization takes place.[63]

[54] DG TREN, (2002), 'Guidelines for Good TPA Practice – Second Version: A Draft for Discussion, 21 October 2002'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/guidelines2nd%20changes.pdf
[55] Madrid Forum, (2002), 'Conclusions of the 6th meeting of the European Gas Regulatory Forum Madrid, 30–31 October 2002'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/conclusionsmadrid6.pdf, p 5.
[56] Brattle Group, (2002), 'Convergence of non-discriminatory tariff and congestion management systems in the European sector'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/brattlestudy.pdf, p 55.
[57] 2003/55/EC.
[58] Art 32, 2003/55/EC.
[59] Art 25, 2003/55/EC.
[60] Madrid Forum, (2003), 'Conclusions of the 7th meeting of the European Gas Regulatory Forum Madrid, 24–25 September 2003'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-7/00_madrid7_conclusions.pdf, p 4.
[61] Art 13, 98/30/EC.
[62] Art 9, 2003/55/EC.
[63] Art 17, paragraph 4, 2003/55/EC.

In addition to these structural changes, the Second Directive mandates regulated access. TSOs are required to have access to networks that are operated by other TSOs.[64] This goes much further than the negotiated access of the 1991 Directive. Also the formal possibilities for derogations were extended. The Commission monitors and reports the progress of market integration.[65] Although the present author found no evidence of the use of this provision, the Second Directive furthermore provides that if it has been implemented in a way that ensures effective and non-discriminatory network access, Member States can apply for exemptions from requirements that are not, or are no longer, proportionate.[66] A new basis for derogation is created for proposed and major new infrastructure, such as interconnectors, which would enhance competition, but are considered economically too risky to be built under the access requirements of the Second Directive.[67] These so-called article 22 exemptions have become common.

The requirement that TSOs provide users with the information they need to obtain access to the system was also added.[68] This requirement seems to reflect and, albeit *ex post*, provide a legal basis for the information requirements in GGP 1. A further, and arguably more important, contribution was made by the acceptance of cost-reflectivity as the basis for access tariffication. Although this choice was stated only in the recitals,[69] the cost-reflectivity tariffication principle could no longer be disputed in the context of the Madrid Forum. The more controversial issue of tariff structure was, however, left to the informal procedure of the Forum. Soon after, the Commission established the European Regulators Group for Electricity and Gas (ERGEG) to advise the Commission on energy market reform.[70] This was mainly a formalization of the CEER that had emerged in the Forum context as can, for instance, be seen from the fact that the CEER's president was elected president of the ERGEG during its first meeting.[71]

[64] Art 18, paragraphs 1 and 2, 2003/55/EC.
[65] Art 31, paragraph 3, 2003/55/EC.
[66] Art 29, 2003/55/EC.
[67] Art 22, 2003/55/EC.
[68] Art 8, paragraph 1, sub d, 2003/55/EC.
[69] Recital 16, 2003/55/EC.
[70] 2003/796/EC.
[71] Cameron, P.D., (2005), 'Completing the Internal Market in Energy: An Introduction to the New Legislation' in Cameron, P.D., (ed.) *Legal Aspects of EU Energy Regulation: Implementing the New Directives on Electricity and Gas Across Europe*, Oxford: OUP, pp 82–3.

3.5 GGP 2

Whether or not in anticipation of the Second Directive, the draft version of GGP 2 which the European Commission had presented to the sixth meeting of the Madrid Forum already included the principle of cost-reflectivity. Not only did tariffs have to be cost-reflective, but also the cost base underlying the tariff calculation had to be published.[72] A further step was also proposed in relation to cross-border issues. Whereas GGP1 had already called upon TSOs to seek convergence of charging principles and tariff structures, this did not preclude individual TSOs from imposing such tariffs. The Commission's draft version of GGP2 therefore added an explicit prohibition of the application of tariffs which obstruct trade.[73] Regarding the issue of tariff structures, a dual development is discernable. The political deadlock of the fifth Forum continued to exist. The guidelines on tariffication therefore do not prescribe the use of an entry–exit structure. However, the NRAs have regulatory powers, for which no agreement from TSOs is required. The conclusions of the sixth meeting called upon CEER to develop guidelines and a roadmap for the implementation of an entry–exit system.[74] While the regulators evaluated the degree of implementation of the tariff structure,[75] TSOs presented its shortcomings[76].

Much can be learned about GGP2 by comparing the Commission's draft with the version presented by the working group and adopted by the seventh meeting of the Madrid Forum.[77] Although the tariffication principles[78] in both documents mention cost-reflectivity, it is added in the final version that the costs should provide an appropriate return on investments (RoI) and that due regard may be taken of benchmarking of international tariffs. As the tariffication principle was set in the Second Directive, it could no longer be disputed. The discussion could therefore move towards its implementation. In a competitive market, outside the

[72] DG TREN, (2002), 'Guidelines for Good TPA Practice – Second Version: A Draft for Discussion, 21 October 2002'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/guidelines2nd%20changes.pdf, p 7.
[73] Ibid.
[74] Madrid Forum, (2002), 'Conclusions of the 6th meeting of the European Gas Regulatory Forum Madrid, 30–31 October 2002'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/conclusionsmadrid6.pdf, p 3.
[75] Madrid Forum, (2003), 'Conclusions of the 7th meeting of the European Gas Regulatory Forum Madrid, 24–25 September 2003'. Available at:http://ec.europa.eu/energy/gas/madrid/doc-7/00_madrid7_conclusions.pdf, p 3.
[76] GTE, (2003), 'Potential Shortcomings of the Entry–Exit System'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-7/28_gte.pdf
[77] Madrid Forum, (2003), 'Conclusions of the 7th meeting of the European Gas Regulatory Forum Madrid 24–25 September 2003'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-7/00_madrid7_conclusions.pdf, p 4.
[78] Ibid. pp 15–16.

framework of a natural monopoly, economic theory predicts that goods will be sold at marginal costs, as every producer will continue to increase production until the marginal costs equal the marginal revenue. It is therefore a particularly significant addition to the GGP2 that TSOs may charge a higher tariff than marginal costs. A justification for this is that it is not only 'fair', but also stimulates development of new infrastructure if a RoI is granted. This interpretation seems in line with the GGP2, as the explicit tariffication objective of generating a RoI which could satisfy the need to provide for appropriate incentives for new investments, was added by the working group.[79]

Another significant change in the final version of GGP2 is that TSOs are not required to publish the cost base they used, as the Commission had proposed.[80] This change is perhaps best understood from the TSOs' point of view. If they have to publish this information, competitors would gain a competitive advantage that is rarely – if ever – granted to those in other markets. Also, the strengthened requirements from the Second Directive regarding, for instance, unbundling, as well as the NRAs' powers, may have led the working group to the conclusion that sufficient guarantees of a fair cost base were provided.

3.6 Access Regulation 2005/1775/EC

The dual nature of the regulatory procedures once again became apparent when the European Parliament and Council adopted the Regulation on conditions for access to the natural gas transmission networks (Regulation 1775).[81] It codifies and extends the voluntary GGP 2.[82] Whereas the latter document had stated that tariffs should be cost-reflective, while including an appropriate RoI, Regulation 1775 went further. In calculating the tariff, it is the actual cost incurred that should be taken into account, insofar as this corresponds to that of an efficient and structurally comparable TSO. The tariff has to be transparent and to include appropriate returns on investment, as well as incentives to construct new infrastructure. The benchmarking of tariffs, especially when effective pipeline-to-pipeline (P2P) competition

[79] Ibid.
[80] DG TREN, (2002), 'Guidelines for Good TPA Practice – Second Version: A Draft for Discussion, 21 October 2002'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/guidelines2nd%20changes.pdf, p 7; Madrid Forum (2003), 'Conclusions of the 7th meeting of the European Gas Regulatory Forum Madrid 24–25 September 2003'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-7/00_madrid7_conclusions.pdf, p 16.
[81] 1775/2005/EC.
[82] Recitals 3 and 6, 1775/2005/EC.

exists is 'a relevant consideration'.[83] Tariffs should also take into account the need for system integrity and its improvement.[84]

Under Regulation 1775, not only are the principles underpinning the access tariff calculation further specified, two more direct measures are taken. The first regards the trading of access capacity on a secondary market. TSOs are required to take reasonable steps to allow and facilitate such trade.[85] This constitutes a move away from strict reliance on regulated tariffs to a complementary and market-based system. The development of trading hubs, especially to the extent that these facilitate short-term trading, appears to be helped by this Regulation. This market-based approach is also reflected in a second novelty in Regulation 1775: auctions. It is stipulated that market-based arrangements, such as auctions, may also be used to determine tariffs, provided that the regulator approves such arrangements and the revenues arising.[86]

Regulation 1775 does not go much further than the GGP2 in the issue of preventing cross-border trade through tariff structures. Cooperation with the relevant national authorities is required when the TSOs seek convergence of regulation.[87] However, no further enhanced mechanism for convergence is provided. Indeed, the goal of harmonization of access tariffs seems more distant in the light of the Commission's ability to set guidelines.[88] These guidelines are to establish the minimum level of convergence required to achieve the goal of Regulation 1775, which is '*setting non-discriminatory rules [...] with a view to ensuring the proper functioning of the internal gas market'*.[89] To this end, the guidelines are to apply to the details of the types of services provided, capacity allocation and congestion management, and technical aspects of transmission.[90] It is then further stipulated that the amendment and application of these guidelines should reflect differences between national gas systems. Although the list of topics provided by the access Regulation is legally not exclusive, the absence of tariff harmonization from the list reflects the political reality that regulation of this matter – *a contrario* – was not feasible and only for this reason left out.

[83] Recital 7, and article 3, paragraph 1, 1775/2005/EC.
[84] Art 3, paragraph 1, 1775/2005/EC.
[85] Art 8, 1775/2005/EC.
[86] Article 3, paragraph 1, 1775/2005/EC.
[87] Article 3, paragraph 2, 1775/2005/EC.
[88] Article 9, 1775/2005/EC.
[89] Article 1, 1775/2005/EC.
[90] Article 9, paragraph 1, 1775/2005/EC.

3.7 Explanatory Notes

The European Commission published notes explaining both the Second Directive and the access Regulation.[91] Of particular importance is the 2007 document on tariffs.[92] As laid down in the regulating documents, cost-based tariffication is the EU-wide principle. The Commission considers entry–exit tariffication to be generally regarded as most appropriate for ensuring non discrimination.[93] The need to take system integrity into account not only applies to investment in further capacity, but also covers other costs incurred in the resolution of integrity problems,[94] for instance consultants' fees. The problem of comparability standards – important in relation to the cost limitation set by efficient and structurally comparable TSOs – was, however, not resolved, but was allocated to the national level.[95] The benchmarking of tariffs was explained as a procedure that is separate from the cost-comparison. It can even lead to deviation from the cost reflectivity principle.[96] This is explained in the context of pipeline-to-pipeline competition where deviation from competitors' tariffs would indeed strain competition *between* the pipelines. However, the implications for competition *within* the pipelines are not discussed. This is of particular relevance in the light of the Brattle Group's suggestion that only cost-reflectivity can preclude cross-subsidization.

[91] European Commission, http://ec.europa.eu/energy/gas_electricity/interpretative_notes/interpretative_note_en.htm
[92] European Commission, (2007), 'Commission Staff Working Document: on tariffs for access to the natural gas transmission networks regulated under Article 3 of Regulation 1775/2005'. Available at: http://ec.europa.eu/energy/gas/legislation/doc/interpretative_note/sec_2007_535_en.pdf
[93] Ibid, sub 4.
[94] Ibid, sub 8.
[95] Ibid, sub 11.
[96] Ibid, sub 17.

4 EU Framework: competition law

The First Directive had already made reference to EU competition law.[97] In 2002, the European Commissioner for Competition, Mario Monti, outlined various contributions it had made to the development of the internal market for gas.[98] The application of merger rules had prevented the strengthening of dominant positions. The European Commission had worked constructively with industry to restrict anti-competitive destination clauses. Also the landmark cases following a complaint by the US company Marathon had made a significant and ongoing contribution to market liberalization. Competition law thus complemented and reinforced the sector-specific regulation. However, it remained supportive and focussed on settlement, rather than on using formal procedures to deal with cases.[99] The Commissioner argued that competition law was not always the best way to tackle the problems caused by the gaps left by the unevenly implemented First Directive, and concluded his remarks recommending the adoption of the Second Directive. Also in a later speech, he explicitly argued in favour of a policy of conciliation[100]:

> *'this [the settlement regarding destination clauses with ENI and Gazprom] goes to show that during the initial delicate transition phase from monopolized to liberalized energy markets, the focus should lie, in some occasions, on Commission's interventions improving effectively the market structure, rather than on formal procedures imposing fines'.*

[97] Art 22, 98/30/EC.
[98] Monti M., (2002), 'The single energy market, the relationship between competition policy and regulation', speech delivered on 7 March 2002 to House of Deputies 10th Commission on Productive Activities, Commerce and Tourism, Rome, SPEECH/02/101.
[99] Cameron, P.D., (2007), *Competition in Energy Markets: Law and Regulation in the European Union*, (2nd edition), Oxford: OUP, p 564.
[100] Monti, M., (2003), 'Applying EU Competition Law to the newly liberalised energy markets', speech delivered on 6 October 2003 to World Forum on Energy Regulation, Rome, SPEECH/03/447.

4.1 Growing importance

Since 2001, the European Commission has produced benchmarking reports concerning the progress of market integration. The failings of the liberalization process were reported on a yearly basis. In 2005, the DG Comp stepped in. Citing rising prices, combined with illiquid trading hubs, especially against the backdrop of only limited new entry, cross-border flows and unbundling, the Commission used its recently enhanced[101] powers to open a sector enquiry.[102] The Commission's main conclusions[103] were that the wholesale market had remained largely divided by national boundaries. The limited level of unbundling hampered access to infrastructure and consequently market entry. In particular, cross-border trade was found to be underdeveloped, which was partly attributable to limited TPA. Sufficient transparency was lacking, resulting in an uneven playing field where incumbents had market information and their competitors did not. Trading hubs were insufficiently liquid, resulting in ineffective price formation, especially against the backdrop of continuing linkage to oil prices. Problems were also found in downstream markets where, among other aspects, the duration of contracts impeded newcomers' possibilities of entry. Incumbents were also favoured by balancing systems. A more positive outlook existed regarding LNG, where competitors, and also producers, were increasingly gaining access to capacity.

In themselves, these findings were not surprising. It is in the steps that almost inevitably had to follow from the report that the biggest changes lay. In 2008, European Commissioner for Competition Neelie Kroes remarked: *'completing the single European market for electricity and gas is one of my top priorities'.*[104] She promised or, depending on the audience, warned, a 2007 conference that the Commission will *'use all its powers under the competition rules'.* It appears that a body of law exists, parallel and complementary to the sector-specific regulation, of which the application is underdeveloped but imminent. The reason why this situation was able to emerge lies in the complexity of competition law. Establishing a violation of competition law is a difficult process, which requires complaints, or other indications of market malfunctioning, in order to be initiated. Also, given that it has limited

[101] Art 17, 2003/1/EC.
[102] European Commission, (2005), 'Decision initiating an inquiry into the gas and electricity sectors pursuant to Article 17 of Council Regulation (EC) No 1/2003', COM (2005)1682.
[103] European Commission, (2006), 'Communication regarding Enquiry into the European Gas and Electricity sectors', COM/2006/0851 final, sub 2.
[104] Kroes, N., (2008), 'Structural Reforms to the Energy Market', speech delivered on 27 February 2008 to European Affairs Platform, Brussels, SPEECH/08/106.

resources, the Commission has to make political choices regarding the sectors and companies it investigates. Many competition rules, however, do affect access and tariffication, with varying degrees of applicability.

4.2 Broad overview

Under Article 81 of the Treaty establishing the European Community (EC), signed in Maastricht in 1992, it is prohibited to make agreements, decisions or maintain practices which *'may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the common market'*. The Treaty stipulates that this includes: price-fixing, controlling production, markets, technical development, or investment, the sharing of markets or sources of supply, the discriminatory application of conditions to transactions, and tying unrelated conditions to the conclusion of the contract. An agreement violates the article if it attempts, even unsuccessfully, to distort the market..[105]Agreements that violate these rules are void, unless an exemption has been granted – either specific, or in the form of a block exemption.[106] Such exemptions are granted when three conditions are met:

- The agreement must contribute to or improve technological progress or the production or distribution of goods.
- It must allow the consumer his fair share of the benefits.
- The restrictions are indispensable in obtaining the objective, and do not make it possible to eliminate competition with regards to a substantial part of the market.

The European Commission abolished joint sales and purchase groups under Article 81 EC. Illustrative of this is the case[107] of the Norwegian gas negotiation committee GFU: its main

[105] Roggenkamp, M., [et al.; ed.] (2007), *Energy Law in Europe: National, EU, and International Regulation'* (2nd edition), Oxford: OUP, p 253.
[106] Art 81 EC.
[107] COMP/E-4/36.072 - GFU; European Commission, (2002), 'Commission successfully settles GFU case with Norwegian gas producers', press release IP/02/1084. Available at: http://europa.eu/rapid/pressReleasesAction.do?reference=IP/02/1084&format=HTML&aged=0&language=EN&guiLanguage=en

stakeholders ultimately agreed to market their gas individually.[108] Also, vertical applications of Article 81 EC exist. The Commission agreed with Gazprom and ENI that destination clauses would be taken out of their contracts,[109] initiating a process of contract adaptations throughout Europe.[110] However, this process was particularly protracted. Indeed, it was not until July 2007 that the last destination clauses were taken out of European contracts.[111]

The Commission does not *necessarily* find long-term contracts anti-competitive, and recognizes their need to ensure upstream investment.[112] However, if these contracts eliminate competition in a large part of a national or regional market for a sustained period of time, they are in violation of the Treaty. Also price-setting cartels are prohibited by the article.

Article 82 EC has an arguably larger impact on access tariffs. It prohibits the abuse of a dominant position within the common market, or a substantial part of it. This does not preclude companies from *having* such a position, but does constitute a special responsibility with respect to how they conduct their business.[113] A market has both a geographic and a product or service reach. The geographic reach is not necessarily coterminous with national boundaries, and the determination thereof is often very fact-specific.[114] The boundaries of the product or service market are determined by the substitutability of the products.[115] If a dominant position exists, it can be abused by imposing unfair prices, limiting production, markets, or technological advancements, applying dissimilar conditions, or by tying unrelated conditions to the conclusion of the contract.[116]

[108] European Commission, (2003), 'XXXIInd Report on Competition Policy 2002'. Available at: http://ec.europa.eu/comm/competition/annual_reports/2002/en.pdf, p 32.
[109] European Commission, (2003), 'Commission reaches breakthrough with Gazprom and ENI on territorial restriction clauses', press release IP/03/1345. Available at: http://europa.eu/rapid/pressReleasesAction.do?reference=IP/03/1345&format=HTML&aged=1&language=EN&guiLanguage=en
[110] Nyssens, H. [et al], (spring, 2004), 'The territorial restrictions case in the gas sector: a state of play', *Competition Policy Newsletter*, Brussels: DG COMP, pp 48–51.
[111] European Commission, (2007), 'Commission and Algeria reach agreement on territorial restrictions and alternative clauses in gas supply contracts', IP/07/1074.
[112] European Commission, (2003), 'XXXIInd Report on Competition Policy 2002'. Available at: http://ec.europa.eu/comm/competition/annual_reports/2002/en.pdf, p 32.
[113] See for instance PO / Irish Sugar (Ireland) – COMP/34.621.
[114] Roggenkamp, M. [et al.; ed.], (2007), *Energy Law in Europe: National, EU, and International Regulation'* (2nd edition), Oxford: OUP, p 261.
[115] *United Brands* v. *Commission* – Case 27/76 [1978] ECR 207.
[116] Art 82 EC.

A doctrine under Article 82 EC that may become of increasing relevance to gas transmission is the denial of access to essential facilities. This doctrine developed, starting with the *commercial solvents* case.[117] A company that had a dominant position in the market for raw materials used to produce certain derivatives, was not allowed to deny the producer of such derivatives access to said raw materials – a facility essential for the production process. More generally, a facility is essential if competitors cannot provide services to their customers without it. Gas transmission networks may be found to be such essential facilities, although the present author does not know of any cases in which this has been established.[118] There are, however, objective justifications for the denial of access.[119] Congestion may mean that the company is simply unable to offer the relevant service. Also, objective business reasons, such as insolvency, may be held against a potential customer.

It is forbidden under Article 87 EC for Member States to aid certain undertakings, or to produce certain goods, if such aid distorts, or threatens to distort, competition. This does not include measures which benefit all undertakings. Aid should, however, be broadly interpreted, and taken to mean such measures which entail the transfer of public resources to undertakings, in a way that economically advantages them beyond the benefits they would have obtained without the measure. This includes, for instance, subsidies, but also low-interest loans or the foregoing of revenue by the state.[120] The provision of funds in a way that reflects economic conditions should, however, not be considered illegal state aid.[121] Three kinds of aid that are compatible with the EC Treaty are:

- aid bearing a social character, granted to individual consumers without discrimination regarding the origin of the product,
- aid that compensates for damages caused by natural disasters
- aid granted to areas in Germany in compensation for the economic disadvantages of the division of Germany before 1991.[122]

[117] ICI SpA and Commercial Solvents v Commission. Cases 6 and 7/73 [1974] E.C.R. 223.
[118] See for a more elaborate discussion: Ash-Taylor, J. and Moussis, V., 'EU Competition Law and Third-Party Access to Gas Transmission Networks', *14 [2004/2005] Utilities Law Review*.
[119] *Oscar Bronner* v. *Mediaprint*, C-7/97, [1998] ECR I-7791.
[120] Roggenkamp, M. [et al.; ed.], (2007), *Energy Law in Europe: National, EU, and International Regulation,* (2nd edition), Oxford: OUP, p 284.
[121] *Belgium* v. *Commission* – C-556/93 [1996] ECR I-767.
[122] Art 87, paragraph 2, EC.

Exemptions may be granted for aid to underdeveloped areas, aid that promotes the execution of a project of European interest or to resolve an economic disturbance, aid to facilitate economic activities or strengthen certain economic areas, provided such aid does not hamper trade and does not contradict the common interest and, under the same provision, aid that promotes culture. The Council can add kinds of State aid to this list.[123]

Regarding certain industries, governments have special interests in establishing monopolies or in granting special rights. Article 86 EC contains exceptions to the competition rules of the Treaty, regarding *'undertakings entrusted with the operation of services of general economic interest or having the character of a revenue-producing monopoly'*. They do not apply *'in so far as the application of such [Treaty violating] rules obstructs the performance, in law or in fact, of the particular tasks assigned'*. To entrust an undertaking with a task requires express legislative allocation thereof.[124] For obstruction of performance it suffices that the undertaking would not be able to perform the task economically without the exception.[125] In the case of electricity at least, network reliability, security of supply, the need for universal coverage, consumer protection, and the recovery of stranded costs are all covered by Article 86 EC.[126]

On the basis of the Merger Regulation,[127] the Commission has jurisdiction over concentrations with a community dimension. A 'concentration' is the result of a merger of two or more undertakings, or parts thereof, or acquisition in a way that combines control over the undertakings. A joint venture that performs all the functions of an independent undertaking can fulfil these criteria.[128] A community dimension exists if at least one of two sets of criteria is satisfied. Under the first, the concentration has an aggregate worldwide turnover of 500 billion Euros or more, of which at least half is earned within the Community, unless two-thirds of the Community-wide total was sourced from one Member State. The second situation occurs when the worldwide aggregate turnover is in excess of 2.5 billion Euros, with the community-wide turnover of at least two of the concerned undertakings being 100 million Euros. The combined turnover of all the undertakings concerned in each of at

[123] Art 87, paragraph 3, EC.
[124] *GVL* v. *Commission* – Case 7/82, [1983] ECR 483.
[125] *Commission* v *Netherlands* – C-157/94 [1997] ECR I-5699.
[126] Roggenkamp, M. [et al.; ed.], (2007), *Energy Law in Europe: National, EU, and International Regulation,* (2nd edition), Oxford: OUP, pp 272–6.
[127] 139/2004/EC.
[128] Art 3, 139/2004/EC.

least three Member States surpassing 100 million Euros, while in at least three of said Member States two undertakings generated 25 million combined, unless two-thirds of the community-wide turnover was earned in one Member State.[129] Once jurisdiction has been established, the Commission may review the concentration, and can declare it incompatible with the common market if it would significantly impede competition in the common market or a part of it.[130] Also to this end, the relevant market needs to be established, requiring a test similar to that of Article 82 EC.[131]

4.3 Access tariffication implications

European competition law has already shown some of its impact on energy regulation. Most of the developments were led by the electricity market, where the liberalization progress began earlier. The latter cases are *by analogy* also instructive for TPA tariffication in gas, as equality dictates that the European Commission treats both markets equally, unless the differences justify deviation. It is important to realize, however, that much remains uncertain. This is because the formal cases initiated by the Commission take place in various parts of the process of market integration, and therefore in a changing regulatory context. Deviation from earlier rulings may result if current regulation differs from the regulation at the time. Moreover, decisions in specific circumstances and in specific markets do not necessarily predict their application under different circumstances, meaning that the relatively few currently existing cases are unlikely to tell the story exhaustively. Regarding cases that resulted in settlements, it is important to be aware of the size of the fines commonly imposed on a company under formal procedures. During negotiations, these Commission powers serve a function comparable to Damocles' sword. This cannot but induce the companies to be more cooperative at times towards the Commission than a court of law would have required them to be. The terms of specific settlements are therefore not directly applicable to other cases, although the precedent set may be of importance, including in formal cases.

DG Comp was involved in the German gas market's liberalization. Use had been made of the option of negotiated TPA provided by the First Directive. An agreement –

[129] Art 1, paragraphs 2 and 3, 139/2004/EC.
[130] Art 2, 139/2004/EC.
[131] Roggenkamp, M. [et al.; ed.], (2007), *Energy Law in Europe: National, EU, and International Regulation,* (2nd edition), Oxford: OUP, p 279.

Verbändevereinbarung I (VV I) – was reached in July 2000. However, this left so many questions unanswered, that negotiations continued forthwith, resulting in annexes to the agreement in both March and September 2001. Following the organization of the German gas market, access tariffs were arranged at different rates at the local, regional, and interregional level. Regional transmission charges were calculated using postal tariffs while at the interregional level, distance-based tariffs were used. Neither tariff was cost-based, both were meant to be benchmarked internationally. Local distribution on the other hand was cost-based. However, instead of calculating the costs, the industry averages were published and used by many companies as their tariffs. In May 2002, VV II was signed. At the regional level, a change to distance-related tariffs was made, although caps and minima applied in many cases. Guidelines were laid down for the benchmarking process that remained the standard at the interregional level.[132]

It is against this backdrop that DG Comp's actions should be seen, regarding a complaint made by the Norwegian affiliate of the American oil company Marathon. The company claimed to have been refused access to the grids of five European TSOs, including the German Thyssengas, BEB, and Ruhrgas in Germany in 1989 and 1995 – even before the first Directive. The complaint was grounded upon abuse of a dominant position, in violation of Article 82 EC and the collusion to deny access in violation of Article 81 EC. However, Marathon reached an agreement *ex iure* and withdrew the complaint.[133] DG Comp pursued the case and settled later with all three German companies individually.

The first agreement was closed with Thyssengas in November 2001.[134] It included requirements that the duration of short-term capacity contracts was brought down to a period of one day. Capacity rights became tradable. At the EU level, it was not until the access regulation in 2005 – four years later – that *'basic rules'* were laid down regarding the latter.[135] Also, the use-it-or-lose-it principle would be applied to Thyssengas' own trading branch. However, the changes remained largely in line with the path-dependent system.

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[132] Lohmann, H., (2006), *The German Path to Natural Gas Liberalisation: is it a special case?*, Oxford: OIES, p 28.
[133] Cameron, P.D., (2007), *Competition in Energy Markets: Law and Regulation in the European Union*, (2nd edition), Oxford: OUP, p 358.
[134] European Commission, (2001), 'Commission settles Marathon case with Thyssengas', press release IP/01/1641. Available at: http://europa.eu/rapid/pressReleasesAction.do?reference=IP/01/1641&format=HTML&aged=0&language=EN&guiLanguage=en
[135] Recital 15 and art 8 1775/2005/EC.

The second German settlement – with BEB – in July 2003 was different.[136] The agreement was reached in the period between the Second Directive and the seventh meeting of the Madrid Forum. Like Thyssengas, the company agreed to facilitate secondary trading and the use-it-or-lose-it principle. However, while the discussion in the Madrid Forum about tariffication structures was ongoing, (unresolved by the Second Directive), BEB agreed with DG Comp on an entry–exit structure. The impact of this agreement is significant, as it undermined the argument used by the German government in the context of the Madrid Forum that the German case is special, and that entry–exit tariffication, which was becoming the option of choice at the time, would not work there.[137]

The last company to settle – in November 2003 – was Ruhrgas.[138] However, this agreement did not exactly continue the series of accomplishments of DG Comp. Ruhrgas agreed to entry–exit tariffs, and allowed the separate booking of entry – and exit rights. It would use six tariff zones, to be reduced to five and later four in 2005 and 2006 respectively. Also, in this last settlement, the use-it-or-lose-it principle was agreed upon. However, shippers criticized the agreement, arguing that no more than three tariff zones were necessary. In addition, entry and exit capacity could not be flexibly combined. Although transmission through multiple tariff zones was possible, shippers would be charged entry – and exit charges in multiple zones, resulting in 'pancaking', which means that multiple individual tariffs are accumulated. Also, on certain routes, charges increased significantly.[139] Nevertheless, DG Comp's overall involvement in the German liberalization process has been termed *'one of the main drivers in improving network access'*.[140]

It does not seem implausible, however, that, in particular, Article 82 EC has had a wider impact. As the provider of a network service and therefore the holder of a natural monopoly,

[136] European Commission, (2003), 'Commission settles Marathon case with German Gas Company BEB', press release IP/03/1129. Available at: http://europa.eu/rapid/pressReleasesAction.do?reference=IP/03/1129&format=HTML&aged=0&language=EN&guiLanguage=en

[137] Lohmann, H., (2006), *The German Path to Natural Gas Liberalisation: is it a special case?*, Oxford: OIES, p 40.

[138] European Commission, (2004), 'Commission settles Marathon case with Gaz de France and Ruhrgas', press release IP/04/573. Available at: http://europa.eu/rapid/pressReleasesAction.do?reference=IP/04/573&format=HTML&aged=0&language=EN&guiLanguage=en

[139] Lohmann, H., (2006), *The German Path to Natural Gas Liberalisation: is it a special case?*, Oxford: OIES, p 44.

[140] Ibid. p 179.

the TSO seems prone to having a dominant position in its region, resulting in the aforementioned *special responsibility*. Article 82 EC also relates to cross-subsidization,[141] as a dominant position can be abused by foreclosing a market through the application of predatory tariffs which are financed through operations in other markets.[142] Notwithstanding the importance of unbundling requirements, it appears that competition law could play a significant role in this regard.

The merger case VEBA/VIAG[143] also involves Germany, this time in the electricity sector. Similar – and prior – to developments in gas, a Verbändevereinbarung had been created. The second version of this document, VV II, included a supplementary 'T' component which was applied in a way which discriminated between transit between the north and south zones of the country. The zones were gerrymandered so as to allow the incumbents to avoid the tariff, provided they stayed within their traditional areas.[144] When VEBA and VIAG, two major players on, *inter alia*, the electricity market, proposed a merger, there was an opportunity for DG Comp to use its powers under merger regulation against 'T' tariffs.[145] These tariffs were levied each time transmission took place between different zones, or the destination lay outside the country, and thus impeded competition. Not only was the new concentration required to specify different cost constituents, it was also required to set 'T' to zero. Although this does not formally eliminate the component, this requirement amounts economically to a change in the tariffication structure applied by the company. The process of gas market liberalization is designed to change the number and structure of companies, and the German case illustrates that merger regulation is likely to influence this process.

However, despite the apparent success of competition law and policy in one German merger case, another shows its limitations. When two energy majors, E.ON and Ruhrgas proposed a merger, both the German Federal Cartel Office and the German Monopolies Commission evaluated the deal negatively. Nevertheless, the German government took the view that the merger served the national interest and approved it. The role of the European Commission in

[141] Roggenkamp, M. [et al.; ed.], (2007), *Energy Law in Europe: National, EU, and International Regulation*, (2nd edition), Oxford: OUP, pp 267–70.
[142] Deutsche Post AG – Comp/35.141.
[143] VEBA/VIAG – Comp/M.1673.
[144] Cameron, P.D., (2007), *Competition in Energy Markets: Law and Regulation in the European Union*, (2nd edition), Oxford: OUP, p 335.
[145] VEBA/VIAG – Comp/M.1673, sub commitments electricity, VI, 'Verbändevereinbarung II', p 48 (Dutch text).

this case has been disputed. It claimed not to have jurisdiction over the merger, as both companies earned over two-thirds of their revenues within Germany. However, at least for the year preceding the merger, it has been argued that over one third was earned outside Germany.[146] If a more active approach had been taken, the Commission could potentially have influenced the way the balance between the German national interest and the importance of the development of competition was struck.

Regulation regarding state aid is particularly important in the initial phases of the liberalization process. Investment decisions of a nationally owned monopolist tend to differ from those taken in a competitive market. This may result in 'stranded' costs upon liberalization, when long term commitments made as a monopolist result in costs that cannot be recovered under competitive market conditions. The commission holds the view that aid designed to offset stranded costs facilitates the development of certain economic activities, and can therefore be compatible with Community law.[147] However, the subject matter has evolved mainly in the electricity market. The first electricity Directive allowed Member States to apply for a transitional regime regarding commitments that they would not be required to meet.[148] In a later communication, the Commission further elaborated upon the matter – again regarding electricity.[149] In the gas Directive on the other hand, only take-or-pay contracts were thought to merit special treatment regarding stranded costs.[150] Nevertheless, no use has ever been made of the relevant article.[151] One explanation for the focus on electricity can be derived from the cases where Member States applied for exemption from state aid rules.[152] They largely relate to the generation sector of the electricity industry. It is in this part of the value chain, which has only limited similarities with gas production, that competition is most likely to render an installation economically unviable. This effect is enhanced if the original investment decision can be traced back to

[146] Lieb-Dóczy, E., (August 2002), 'The E.ON–Ruhrgas Merger: The German Government Decides Against Competition', *Energy Regulation Brief*, National Economic Research Associates. Available at: www.nera.com/NewsletterIssue/5483.pdf
[147] Cameron, P.D., (2007), *Competition in Energy Markets: Law and Regulation in the European Union*, (2nd edition), Oxford: OUP, p 437.
[148] Art 24, 96/92/EC.
[149] European Commission, (2001), 'Commission adopts document on "Methodology for analysing state aid linked to stranded costs" in the electricity sector', press release IP/01/1077. Available at: http://europa.eu/rapid/pressReleasesAction.do?reference=IP/01/1077&format=HTML&aged=1&language=EN&guiLanguage=en
[150] Art 17, 98/30/EC.
[151] Cameron, P.D., (2007), *Competition in Energy Markets: Law and Regulation in the European Union*, (2nd edition), Oxford: OUP, p 431.
[152] Ibid. see pp 438–46 for an overview by country.

political concerns involving, for instance, the environment, or security of supply, rather than cost-efficiency, which may have particularly influenced the type of fuel chosen.

5 Potential Regulatory Gaps

Both an EU-wide tariffication principle and a dominant tariff design structure emerged from the sector-specific regulation: cost-reflectivity and entry–exit respectively. Competition law complements the regulation. This promotes market integration, but questions remain in relation to its application. The three main questions are:

- *which* costs should be *reflected* in the total revenue requirement
- *how they should be reflected*
- *how the revenue requirement should be allocated to individual users.*

5.1 Cost Accounting

It is not readily apparent *which* costs should be taken into account. The cost accounting choices made by the TSO, have an impact on the cost assessment.

One of the first choices an accountant makes concerns the accounting principles employed. The latter is expressly plural, as most accounting systems use multiple principles. Under historic costing, the cost of the asset or the good used in the production process does not alter for the purpose of cost allocation with the economic environment after the purchase was made. This is, however, problematic if, for example, a market price is clearly lower than the purchasing price, if the assets were donated, or if the investment was made using non-cash assets.[153] Alternative principles include pricing assets according to their current, or replacement costs.[154] Yet another principle is activity-based costing, used to account for costs based on the production process from which it is sourced.[155]

[153] Wells, M.C., (Spring, 1971), 'Axioms for Historial Cost Valuation', *Journal of Accounting Research*, Vol. 9, No. 1, pp 171–80.
[154] Swanson, E.P., (Oct., 1990), 'Relative Measurement Errors in Valuing Plant and Equipment under Current Cost and Replacement Cost', *The Accounting Review*, Vol. 65, No. 4, pp 911–24.
[155] Babad, Y.M. and Balachandran, B.V. (Jul., 1993), 'Cost-Driver Optimization in Activity-Based Costing', *The Accounting Review*, Vol. 68, No. 3, pp 563–75.

A number of distinctions are in place. Costs can be both variable or fixed, and direct or indirect.[156] The first distinction requires the identification of costs as fixed or variable. Costs that vary with the activity are variable, ones that do not are fixed. For instance, the laying of pipelines incurs largely fixed costs, while the majority of costs associated with gas that passes through those pipelines will be variable.

The second distinction involves cost allocation – using economically acceptable means – to a specific service or product. The glue and lighting used in a shoe factory constitute indirect costs; the leather and shoe-making machine are direct costs of a particular production line. The examples given are variable and fixed respectively, illustrating the difference between the two distinctions. Again, the qualification of a cost may result in variations between the accounting costs and the economic costs of a product.

The relevance of these distinctions lies in cross-subsidization, which is the undercosting of one product at the expense of another.[157] If the TSO chooses a cost allocation method that both results in more fixed costs, and is selected in such a way that the incumbent incurs a relatively small share of the variable costs, the latter benefits, as variable costs drive the allocation of fixed costs. An example would be distance-based costing in a market where the incumbent services few distant clients and has more access to local production, storage, and flexibility.

If costs that are economically the incumbent's qualify as indirect, the TSO, and also new entrants, are burdened with them. An analysis of upstream markets, which was in reality made in support of a pipeline investment decision, also has relevance for the trading department, and so could be – partially – attributed to the latter.

EU regulation provides various – albeit insufficient – answers to these problems. The *ex ante* cost classification decision is left to the national level, with only largely *ex post* constraints.

[156] Horngren, C.T. [et al], (2007), *Management and Cost Accounting*, (4th edition), Englewood-cliffs: Prentice-Hall International, p 39.
[157] Ibid. p 332.

A first is principle-based. Inaccurate allocation of costs to products or services is prohibited, because it amounts to discrimination through cross-subsidization, which is illegal under Regulation 1775.[158]

As unbundling requirements do not extend to the ownership structure, accounting separation is prescribed. The auditor verifies the avoidance of discrimination and cross-subsidies.[159] This is a limitation on the cost-qualification possibilities. However, cross-subsidization is not precluded, as the accountant generally lacks sufficient insight into the network and its cost structures, as well as the implications thereof on competition, to identify all cross-subsidization. The efficacy of this measure is thus reliant upon national accounting rules.

The NRA oversees the effective unbundling to prevent cross-subsidies.[160] This includes jurisdiction over cost classification. However, an information asymmetry exists between the regulator and the TSO,[161] leaving possibilities for cross-subsidization. The skills and resources available to the NRA determine the size of this gap. A second tool at the disposal of the NRA is its responsibility to fix or approve tariffs, prior to their entry into force.[162] This allows the *ex ante* verification of cost estimations. A similar information asymmetry problem, however, limits the measure's impact.

Costs also need to be transparent,[163] which obligation – according to the Commission – includes:[164]

> *'the publication (at least to the regulatory authority) of the main summary economic data of the networks, e.g. the regulatory asset base, depreciation, operational costs and costs of capital.'*

[158] Art 3, 1775/2005/EC.
[159] Art 17, paragraphs 2–4, 2003/50/EC.
[160] Art 25, paragraph 1, sub e, 2003/50/EC.
[161] Laffont, J.J., (1994), 'The New Economics of Regulation Ten Years After', *Econometrica*, Vol. 62, No. 3, pp 507–37.
[162] Art 25, paragraph 2, 2003/50/EC.
[163] Art 3, paragraph 1, 1775/2005/EC.
[164] European Commission, (2007), 'Commission Staff Working Document: on tariffs for access to the natural gas transmission networks regulated under Article 3 of Regulation 1775/2005'. Available at: http://ec.europa.eu/energy/gas/legislation/doc/interpretative_note/sec_2007_535_en.pdf, sub 12.

This measure enhances the regulator's abilities to establish what cost allocation methodologies are used. However, additional information that is only available to the company would be needed for their evaluation.

The largely *ex post* limitations on the *ex ante* cost qualification decision do not provide a guarantee that cross-subsidization can be prevented, although opportunities to discriminate are constrained. Competition law may be applicable through Article 82, if cost qualifications result in cross-subsidization to such an extent that a dominant position is abused. However, problems regarding the implementation of this rule are similar to those of sector specific regulation.

Once costs are attributed to access products, problems may arise if pipeline users incur common costs that are lower than if they had incurred the costs individually. Two common allocation principles are: stand-alone and incremental allocation.[165] The first suggests that all users should bear the costs they would have incurred had they been the sole beneficiary. The second calls for users to be ranked as principal or incremental, and to allocate the incremental user only the corresponding costs. In transmission, this problem occurs especially when contractual flows deviate from physical flows as a result of backhauls or swaps. If such cost-savings are not passed on to network users, the incumbent may benefit through the optimization of the transmission portfolio.[166]

The second Directive stipulates that tariffs should:[167]

> *'take account of the long-term, marginal, avoided network costs from demand-side management measures'*

Assuming that *taking into account* cost reductions means they are passed on to network users, this measure precludes the incumbent from benefiting from flow optimization at the expense of new entrants, a significant contribution to clarity regarding the relevant costs, although accounting problems restrain its effect.

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[165] Horngren, C.T. [et al], (2007), *Management and Cost Accounting*, (4th edition). Englewood-cliffs: Prentice-Hall International, pp 147–8.
[166] Brattle Group, (2002), 'Convergence of non-discriminatory tariff and congestion management systems in the European sector'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/brattlestudy.pdf, pp 38–40.
[167] Recital 16, 2003/50/EC.

The TSO's costs are largely fixed and sunk[168] and to a great extent accounted for by the grid's investment costs. A complicating factor is that the latter were often incurred at a time of state ownership. Before a year's pipeline costs can be attributed to cost centres, the total costs incurred over the lifespan of the equity have to be allocated to each year through depreciation. Various depreciation methodologies exist, each having a different impact on the timing of cost allocation. Straight-line depreciation means that the book value of an asset decreases by an amount that remains constant until the asset is written off. [169] This method is 'straight' in the accounting, not the economic, sense, as it does not take inflation into account. Assuming constant revenues and maintenance charges, the return on investment moves in the opposite direction of the asset's value development. This method relies on a lifespan estimation made at the time of investment, which means an asset could still be in use (representing economic value) when it is fully written off, generating profits for the TSO that are not matched by costs, which results in misallocation of costs.

An alternative approach is the decreasing-balance method where depreciation is given by: [170]

(1) $$r = n\sqrt{\frac{s}{c}}$$

Where *r* is the rate of depreciation, *n* is the expected lifecycle in years, *s* the residual value upon disposal of the product and *c* is the acquisition cost. An important advantage of this system is that it does not yield an inverse relationship between the asset's value and profit to the same extent that straight-line depreciation does. However, for gas pipelines, it is difficult to estimate the residual value and exact lifespan, whereas these parameters have a major impact on the depreciation rate.

The first Brattle Report recommended economic depreciation.[171] This methodology is similar to the straight-line depreciation method, with the difference that the former takes inflation

[168] Brattle Group, (2000), 'Methodologies for Establishing National and Cross-border Systems of Pricing of Access to the Gas System in Europe'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-2/methodologies.pdf, p 95.
[169] Bierman, H. Jr., (1961), 'Depreciable Assets: timing of expense recognition', *The Accounting Review*, Vol. 36, No. 4, pp 613–18.
[170] Glautier, M.W.E. and Underdown, B., (2001), *Accounting: Theory and Practice*, (7th edition), Englewood-cliffs: Prentice-Hall International, p 122.

into account, which means that depreciation is straight in an economic rather than an accounting sense. However, this method does not resolve the inverse relationship between profits and asset value.

The examples of depreciation methodology demonstrate various ways of allocating costs to parts of the life cycle. The goal of this exercise should be to make accounting costs coterminous with economic costs, while taking increasing maintenance costs into account.[172] However, the choice of amortization scheme can be used to cross-subsidize between different time periods, again providing the possibility for abuse.

For the accounting year involved, over-allocation of costs amounts to cost inflation. For reasons which will be discussed below, the TSO may also want to use other means to increase costs. An upper limit to the absolute level of costs is given in the Access Regulation. It extends the cost-reflectivity principle with the requirement that actual costs should be reflected, insofar as they correspond with those of *an efficient and structurally comparable* TSO.[173] According to the Commission:[174]

> *'structural differences for instance with respect to the age of the network, security of supply obligations or the required resilience of the network need to be taken into account. To determine a structurally comparable and efficient network operator may require the taking into account of relevant findings at national and international level. Regulators may establish criteria to define efficient and structurally comparable network operators.'*

It is not clear *how* these factors should be taken into account. It could equally be argued that the use of an older network should lead to a higher cost base as new investment becomes imminent, or that the remaining value of the asset decreases and warrants lower costs. The task of finding a definition at the national level in the last sentence fits neither that context

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[171] Brattle Group (2000), 'Methodologies for Establishing National and Cross-border Systems of Pricing of Access to the Gas System in Europe'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-2/methodologies.pdf, p 53.
[172] Glautier, M.W.E. and Underdown, B., (2001), *Accounting: Theory and Practice*, (7th edition), Englewood-cliffs: Prentice-Hall International, p 123.
[173] Recitals 6 and 7 and art 3, paragraph 1, 1775/2005/EC.
[174] European Commission, (2007), 'Commission Staff Working Document: on tariffs for access to the natural gas transmission networks regulated under Article 3 of Regulation 1775/2005'. Available at: http://ec.europa.eu/energy/gas/legislation/doc/interpretative_note/sec_2007_535_en.pdf, sub 11.

nor the nature of Europe's gas market in the light of the subsidiarity principle.[175] The largely national orientation of most gas markets means that international comparisons are required. An EU-wide definition therefore seems most appropriate, while its absence reflects the political reality of disagreement between stakeholders, rather than practical considerations. It is in this light in particular that an efficient and structurally comparable TSO is usually hard to find.

Competition law had a particular relevance to asset valuation at the time of liberalization. Evaluating a transmission grid is an arduous procedure, not necessarily resulting in a single correct answer. Regulation regarding State aid seems to require that the price paid to the government does not constitute financial help.

The potential for abuse and cross-subsidization using different cost-accounting systems is thus illustrated, but not exhausted. The problems identified may appear marginal, but are relevant for two reasons. Cross-subsidy affects both the benefactor and the beneficiary and in opposite directions, which doubles the effect. Moreover, costs matter, particularly in the gas industry where the product is homogenous and competition is therefore largely price-based.

5.2 Cost-reflective tariffs

Under the unrealistic assumption of an accounting system where economic and accounting costs are coterminous, the following question is *how such costs should be reflected.*

Measured costs are only one of three tariff constituents. The other two are the return on investment and incentives for further investment. These are best evaluated jointly as returns on investments usually *are* the investment incentive.

Once investments in pipelines are made, costs are largely sunk. The TSO, therefore, should not take these into account when making his operating decision, allowing the regulator to set the access tariff equal to marginal costs. However, investors then do not earn a RoI. If investors predict the regulator will follow this methodology, they will not invest, as the net present value (NPV) of expected future cash flows is exceeded by the investment costs.

[175] Art 5 EC.

Presuming investments are needed, and in the interest of society and consequently the regulator, regulatory commitment to a fair RoI must be demonstrated.[176] Various alternatives to its calculation exist.

In North America, Rate of Return (RoR) regulation was developed through case law. In the 1898 *Smyth v. Ames* case[177] it was argued that an unduly low RoI constitutes a violation of property rights by the regulator. The US Supreme Court held that companies are entitled to a *fair return* on the value of what is employed for the public convenience, whereas the public has a right to protect itself from companies seeking more than a fair return.

The cost-plus basis of the RoI is, however, prone to suffer from the Averch–Johnson effect. This holds that guaranteeing a positive RoI for *any* investment leads to overcapitalization – gold-plating – at the expense of the public, if investments are made when the NPV of future returns exceeds the costs of capital.[178] RoR regulation therefore requires further interpretation.

In *FPC v. Hope Natural Gas Company*,[179] it was prescribed that the RoI should be *'commensurate with returns on investments with corresponding risks'*. This is, however, only a directly applicable calculation methodology if the investment is risk-free, in which case the RoR equals the risk-free interest rate.[180] Regulators in the 1980s developed the 'used and useful' doctrine, which prescribes that a RoI is granted only for investments that are both used and useful, leaving returns to vary with fluctuations in costs and demand. However, the main problem of RoR regulation – the lack of incentives to cut costs – thus remains, as revenues continue to be linked to costs.[181]

[176] Newbery, D., (2000), *Privatization, Restructuring, and Regulation of Network Utilities*, Cambridge, MA: MIT Press, pp 35–8.
[177] *Smyth* v. *Ames*. US Supreme Court. 171 U.S. 361 (1898).
[178] Averch, H. and Johnson, L.L., (1962), 'Behavior of the Firm Under Regulatory Constraint', *The American Economic Review*, Vol. 52, No. 5, pp 1052–69.
[179] *FPC* v. *Hope Natural Gas Company*. US Supreme Court. 320 U.S. 591 (1944).
[180] Leland, H.E., (1974), 'Regulation of Natural Monopolies and the Fair Rate of Return', *The Bell Journal of Economics and Management Science*, Vol. 5, No. 1, pp 3–15.
[181] Newbery, D., (2000), *Privatization, Restructuring, and Regulation of Network Utilities*, Cambridge, MA: MIT Press, pp 44–50.

When British Telecommunications was privatized, an alternative system was sought. In his 1983 report,[182] Stephen Littlechild proposed RPI-X. Price increases of a pre-specified basket of goods were not to exceed the Retail Price Index (RPI) minus a parameter X that reflects the efficiency gains which the TSO should achieve. An incentive to cut costs lies in the fact that the TSO is entitled to any profits it can generate under the regulated tariff by outperforming expected efficiency gains for the duration of the regulatory period.

Six years after his report, Littlechild reassessed RPI-X in an article co-authored by Beesley. In addition to the fact that it suffers less from the Averch–Johnson effect, the two main arguments in favour of RPI-X were that regulating the price of a basket of goods allows the producer of the regulated good more flexibility to reflect economic costs in the price level and structure, as well as the relatively transparent and easy-to-operate nature of the system. The main counterargument lies in the analogy with the American RoR regulation. In practice, X must be set to guarantee a reasonable RoI. To prevent the costs of regulatory uncertainty growing to a prohibitive size, guidelines must be laid down for the translation of efficiency gains into the adapted level of X. Therefore, under the assumption that the resulting level of X is not selected at random, but accurately calculated in order to achieve a set of policy goals, the two systems are very similar. Furthermore, price differentiation, cited as an advantage, could become a disadvantage when it facilitates cross-subsidization.[183]

For various reasons elaborated upon in their paper, Beesley and Littlechild argue that RPI-X differs from RoR regulation, as it allows a greater scope for *bargaining*. They subsequently analyse different regulated industries and assess the impact of the system. They find that in industries where more scope for innovation exists, as well as in industries in which multiple players operate, the case for RPI-X is strongest. Gas transmission is not such an industry.[184]

The systems developed on the two sides of the Atlantic, both appear to be attempts to solve the information asymmetry problem faced by the regulator. An inevitable trade-off between cost-reduction incentives and the transfer of rents to consumers exists. A further difference between the two systems is that RoR is based on actual costs, whereas RPI-X uses projected

[182] Littlechild, S.C., (1983), *Regulation of British Telecommunications' Profitability*, London: Department of Industry.
[183] Beesley, M.E. and Littlechild, S.C., (1989), 'The Regulation of Privatized Monopolies in the United Kingdom', *The RAND Journal of Economics*, Vol. 20, No. 3, pp 454–72.
[184] Ibid.

efficient costs. RPI-X yields indexed prices, whereas RoR regulation does not. However, notwithstanding experiences in other sectors, the superiority of either regulatory system regarding gas transmission is yet to be proved.[185] It is therefore not surprising that attempts at alternative solutions have been made by various authors.[186]

No particular approach to cost reflection is laid down at the EU level. However, again, a number of limitations apply. Account should be taken, where appropriate, of the benchmarking of tariffs,[187] which, according to the Commission, is complementary to the need for costs to correspond with those of an efficient and structurally comparable company. This even means that cost-reflectivity may be compromised.

Regulation 1775 further departs from the cost-reflectivity principle in relation to auctions, which inherently contravene this principle. The commission recognizes this and places the burden of the regulation's application in this regard upon the NRA.[188]

The Regulation requires costs to include a RoI and, furthermore, to provide an incentive for further investment.[189] The Averch–Johnson effect occurs under RoR regulation *exactly because* there are incentives, albeit excessive, to invest. RPI-X regulation, on the other hand, entails greater investment risks, and therefore cost of capital.[190] However, RPI-X succeeds better in redistributing efficiency gains to network users. The objectives of non-discrimination and cost-reflectivity therefore seem better served by the latter. Striking the balance between these and other conflicting objectives is left to the national level, almost inevitably leading to regulatory gaps. Competition law's role in this respect has so far been limited, although it may become more important. However, this overview of regulatory choices demonstrates that 'cost-reflectivity' can mean many different things, and that the mere statement of this rather vague term is insufficient.

[185] Newbery, D., (1998), 'Rate of return regulation versus price regulation for public utilities'. Available at: www.econ.cam.ac.uk/dae/people/newbery/files/palgrave.pdf
[186] See for instance Armstrong, M. [et al.], (1996), 'The Access Pricing Problem: a synthesis', *The Journal of Industrial Economics*, Vol. 44, No. 2 (Jun., 1996), pp. 131–50.
[187] Recitals 6 and 7, art 3, paragraph 1, 1775/2005/EC.
[188] Ibid. sub 19.
[189] Recital 7 and article 3, paragraph 1, 1775/2005/EC.
[190] Newbery, D., (1998), 'Rate of return regulation versus price regulation for public utilities'. Available at: www.econ.cam.ac.uk/dae/people/newbery/files/palgrave.pdf

5.3 Entry–exit tariffs

In its 2002 report, the Brattle Group recommended a *'presumption in favour of entry–exit tariffs'*.[191] The process of implementing the system followed soon thereafter, notwithstanding *inter alia* GTE's criticism, as presented in a working paper to the next meeting of the Forum.[192] The academic debate over its merits continues.[193] The first and most obvious of regulatory gaps regards the legal status of the system. Although the European Commission considers entry–exit tariffication a *fait accompli*,[194] the election of this system over others is left to the national level, leaving scope for regulatory mismatches between http://ec.europa.eu/energy/gas_electricity/interpretative_notes/interpretative_note_en.htm Member States. The exact role that competition law has to play in this remains unclear. Although the Commission managed to effectively change the tariff structure in the VEBA/VIAG[195] merger case, and various German gas companies agreed to employ entry–exit tariffs in the aftermath of the Marathon case, it is not certain that measures under competition law could be taken against TSOs whose access tariffs are structured differently. However, even if enty–exit tariffication is fully accepted in principle, the question of *how costs are to be allocated to users* is not fully answered.

The first step in calculating entry–exit tariffs is taken when the NRA determines the revenue requirement and the share of that requirement which may be recovered through the entry–exit tariffs. Then, total capacity is measured, using peak-day flows. Subsequently, long run marginal costs – the costs of providing one unit of service additional to the peak flows over a long period of time (usually ten years) – are estimated at various entry and exit points. An alternative cost base, such as average costs, could be used. The matrix yielded is then used to calculate separate tariffs for entry into and exit from the system. However, no uniform

[191] Brattle Group, (2002), 'Convergence of non-discriminatory tariff and congestion management systems in the European sector'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/brattlestudy.pdf, p 8.
[192] GTE, (2003), 'Potential Shortcomings of the Entry–Exit System'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-7/28_gte.pdf
[193] See for instance Hunt, P., (2008), *Entry–exit Transmission Pricing with Notional Hubs: can it deliver a pan-European wholesale market in gas?*, Oxford: OIES. Available at: www.oxfordenergy.org/pdfs/NG23.pdf
[194] European Commission, (2007), 'Commission Staff Working Document: on tariffs for access to the natural gas transmission networks regulated under Article 3 of Regulation 1775/2005'. Available at: http://ec.europa.eu/energy/gas/legislation/doc/interpretative_note/sec_2007_535_en.pdf, sub 4.
[195] VEBA/VIAG – Comp/M.1673.

solution exists, meaning that one of two methodologies must be employed. Under the first, an arbitrary value is chosen for one entry point, which allows the derivation of the other values. This mathematically easy solution may, however, yield negative values, the practical application of which is challenging. Moreover, the allocation of costs to entry and exit is arbitrary. The alternative approach is to minimize the entry–exit tariff's deviation from calculated costs by using the least squares method. As marginal costs are generally exceeded by the revenue requirement due to sunk costs, the tariffs found are subject to a multiplier to ensure adequate returns.[196]

The system was proposed as an alternative to distance-based tariffication, which was found to contain a number of flaws. Due to the larger number of contracts held by the incumbent, the new entrant has a contract optimization disadvantage under that system. Also, swaps do not solve this problem, as there is no reason to believe that the incumbent would help a competitor by swapping gas. A particular problem exists regarding backhauls. If tariffs are strictly and contractually distance-based, no discounts are given for the latter non-physical flows, whereas they amount to a clear cost-reduction for the TSO and therefore an opportunity for cross-subsidization.[197]

It is against this backdrop that the Brattle Report argued in favour of entry–exit tariffs. The entry–exit system allows the advantages of flow management to be shared between network users, a major stimulus for entry and competition. Liquidity is enhanced, as there is no incentive to cut costs through finding a locally-based trading partner, as there is under distance-based tariffs. Furthermore, the entry–exit system solves the pancaking-problem as encountered in the postal system. However, the TSO cannot charge the customer for transmission through the grid if neither the entry nor exit point lies in its area, and can charge only a low tariff if one of the points does, which means that cooperation and balancing payments between TSOs are required.[198] A further advantage lies in the enhanced possibility of trading of capacity rights on a secondary market,[199] which could stimulate competition.

[196] For a more sophisticated analysis see Hunt, P. (2008), *Entry–exit Transmission Pricing with Notional Hubs: can it deliver a pan-European wholesale market in gas?*, Oxford: OIES. Available at: www.oxfordenergy.org/pdfs/NG23.pdf
[197] Brattle Group, (2002), 'Convergence of non-discriminatory tariff and congestion management systems in the European sector'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-6/brattlestudy.pdf, pp 40–1.
[198] Ibid. pp 44–8.
[199] Hunt, P. (2008), *Entry–exit Transmission Pricing with Notional Hubs: can it deliver a pan-European wholesale market in gas?*, Oxford: OIES. Available at: www.oxfordenergy.org/pdfs/NG23.pdf

GTE identified four shortcomings of the system. The first two – excessive short-distance and non cost-reflective long-distance charges – seem to refer to the same problem: cross-subsidization. The third problem refers to the difficulties for congestion management. As the paths required by shippers are not known to the TSO ahead of time, problems may arise when there is a greater demand for capacity at a specific point in the network than expected. This could be remedied by reducing volumes transported, but this again impedes competition. Lastly, the particular problems occurring when separate systems are operated by multiple TSOs, especially within one country, such as is the case in Germany, were identified. Two options were put forward. The border between systems could serve as both an entry and an exit point. However, the pancaking problem would then reappear. Alternatively, a joint system could be set up. This would require a great deal of cooperation – seemingly exactly the cooperation proposed by the Brattle Group – which was seen as a major problem by the TSOs.[200] Subsequently, additional problems have been identified. The arbitrary and changeable nature of the procedure of cost allocation to entry and exit points, as well as the weak link between entry and exit capacity, and underlying transmission capacity, reduce the value of the capacity right, and consequently its tradability. A further problem lies in the limited investment signals given to TSOs under the entry–exit system. As they make cost estimations, their reading of future investment needs retains its dominant role in investment decisions, thus impeding the signalling function of a secondary market for capacity trading.[201]

The original emphasis on entry–exit's advantages in promoting competition is matched by the disadvantages inherent in the practical implementation of this type of tariff design. GTE argued that cross-subsidizing between capacity for different distances is inherent in the entry–exit model. This is a particular problem in relation to transit.[202] Contrary to distance-based tariffication, pancaking is a potential problem when networks over which gas transits are owned by different TSOs, which is often the case for transit. GTE therefore recommended to the Madrid Forum that separate tariffs should be applied to transit.[203] However, if entry–exit tariffs are to be the standard, a regulatory gap exists between cooperation and compensatory

[200] GTE, (2003), 'Potential Shortcomings of the Entry–Exit System'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-7/28_gte.pdf
[201] Hunt, P., (2008), *Entry–exit Transmission Pricing with Notional Hubs: can it deliver a pan-European wholesale market in gas?*, Oxford: OIES. Available at: www.oxfordenergy.org/pdfs/NG23.pdf
[202] GTE, (2005). 'Transit Report'. Available at: http://ec.europa.eu/energy/gas/madrid/doc-10/gte_transit.pdf
[203] Ibid.

payments between TSOs. A further gap involves investment incentives, which are impeded, as entry–exit tariffication does not provide adequate signals to TSOs.[204] Although tariffs are to include sufficient incentives for investment, and take the integrity of the system into account,[205] certain features of the entry–exit system limit the possibility of achieving these goals.

[204] Hunt, P., (2008), *Entry–exit Transmission Pricing with Notional Hubs: can it deliver a pan-European wholesale market in gas?*, Oxford: OIES. Available at : www.oxfordenergy.org/pdfs/NG23.pdf
[205] Art 3, paragraph 1, 1775/2005.

6 The Netherlands

The regulatory gaps outlined above at the EU level are problematic only to the extent that they result in national regulation that is incompatible with stated European regulatory goals. Implementation in the Netherlands and the UK may prove instructive.

6.1 Dutch gas

In 1959, a very large gas field was found in the Dutch province of Groningen, near a town called Slochteren. The gas was to be produced by the *Maatschap Groningen*, a joint venture owned 60 per cent by the *Nederlandse Aardolie Maatschappij* (NAM) – in turn a 50□50 joint venture owned by Shell and Exxon – and 40 per cent by Dutch State Mines (DSM). Gasunie – in charge of transmission and distribution – was owned 25 per cent each by the two oil companies, 40 per cent by DSM, and 10 per cent by the Dutch state. The founding principles of the production and sales of Dutch gas were laid down in a 1962 letter to the Dutch parliament by Minister of Economic Affairs de Pous.[206] Around the first oil crisis in the early 1970s a small-fields policy was developed. The large and low-cost Groningen field was to serve as 'swing' production so that smaller and more expensive fields could produce continuous flows, rendering more fields economical. This so-called small fields policy was designed to extend the duration of gas revenues for as long as possible, while simultaneously retaining their stability.

In the absence of a market price, an alternative way of valuing the gas had to be developed. The methodology chosen was to set the price of gas equal to the price of an energy-equivalent amount of alternative fuels, which in practice amounted to oil product parity pricing.[207] All parts of the value chain were financed from the final sales price; no separate transmission

[206] Correljé, A. [et al], (2003), *Natural Gas in the Netherlands: from cooperation to competition?*, Amsterdam: Oranje–Nassau groep, pp 26–36.
[207] Ibid. p 109; for a broader discussion and history of this concept see Jonathan Stern, *Is There A Rationale For The Continuing Link To Oil Product Prices In Continental European Long Term Gas Contracts?* NG19, OIES: 2007.

charge was levied. This price was linked to that of oil products and set to just undercut the value of equivalent energy products, allowing gas to gain market share based mainly on its qualitative superiority.

In 1973, DSM's interests were transferred into a full subsidiary, DSM Aardgas B.V. When DSM was privatized in 1989, its subsidiary remained state-owned and its name was changed to *Energie Beheer Nederland* (EBN), but DSM continued to manage the company.[208] On 1 July 2005, Gasunie became exclusively responsible for transportation. The Dutch state[209] owned 10 per cent of Gasunie, and also the legally separate Gas Transport Services (GTS),[210] the TSO that had been founded in July 2004.[211] This is a separation that goes beyond the requirements of the Second Directive, which explicitly states that the ownership and the operation of the network may be combined in the same company.[212]

The legally separate Gasunie Trade and Supply was renamed Gasterra in September 2006.[213] Gasunie includes a construction and maintenance unit which performs such tasks as are required by GTS. The company's other divisions are its Participation and Development unit, which deals with the company's investments in projects such as the Balgzand–Bacton Line (BBL), and Gasunie Deutschland, which operates the German part of the network.

In January 2006, EBN gained full managerial independence from DSM. It continues to hold a 40 per cent stake in Gasterra, meaning that the state owns 100 per cent of Gasunie (GTS) and 50 per cent (10 per cent directly and 40 per cent indirectly) of Gasterra.

The change in the Dutch attitude to the process of liberalization at the European level is remarkable. In its 2004 benchmarking report, the Commission listed the country amongst the best performers on liberalization.[214] However, it was only after the 1996 Third White Paper

[208] EBN, (2008), 'Historie van EBN'. Available at: www.ebn.nl/over-ebn_historie-van-ebn.php
[209] Gasunie, (2006), 'Jaarverslag 2005'. Available at: www.nvnederlandsegasunie.nl/media/pdfs/Gasunie-jv2005.NL.pdf, p 6.
[210] Gasunie, (2007), 'Jaarverslag 2006'. Available at: www.nvnederlandsegasunie.nl/JV/2006/Gasunie-jaarv.2006.NL.pdf, p 74.
[211] GTS, (2005), 'Jaarverslag 2004'. Available at: www.gastransportservices.com/corporate/publications/annual_reports/
[212] Recital 9, Gas Directive.
[213] www.gasterra.nl/OverGasTerra/Pages/GeschiedenisGasTerra.aspx
[214] European Commission, (2004), 'Annual Report on the Implementation of the Gas and Electricity Internal Market', COM(2004) 863. Available at: http://ec.europa.eu/energy/gas/benchmarking/doc/4/com_2004_0863_en.pdf, p 7.

on Energy Policy that the Netherlands began to gain this leading role in gas market liberalization.[215] Before that date, it had opposed many of the changes.

6.2 Regulation

TPA tariff regulation in the Netherlands is multi-layered. The first part is the 2000 Gas Act. It was drafted and, following the Second Directive amended, largely against the backdrop of a vertically integrated Gasunie. A distinction is made between the national grid and other parts of the network.[216] The former is defined as the part of the network that is mainly or exclusively destined for transmission on a national level.[217] A separate legal entity has to be designated as TSO by its owner or owners for the entirety of the national pipeline grid.[218] An amendment to require ownership unbundling was proposed in the Second Chamber, [219] but not adopted. Interconnectors are subject to different rules, in particular the requirement to appoint an operator with similar duties, but fewer constraints than a national TSO.[220]

In the absence of ownership unbundling, 'Chinese walls' were created to separate the interests of GTS and Gasunie Trade and Supply.[221] GTS was not allowed to disclose commercially sensitive information, and it was specifically prohibited from using such information for its related company's trading activities.[222] Following the Second Directive, the law was changed to include the obligation for the TSO to adopt internal regulations preventing discrimination.[223] Every year, a discrimination report is sent to the NRA,[224] the *Dienst Toezicht energie* (DTe). The company's compliance rules stipulate the obligation of individual employees to retain the secrecy of commercially sensitive information. A

[215] Peebles, M., (1999)., 'Dutch Gas', in: Mabro, R. and Wybrew-Bond, I. (eds.), *Gas to Europe: The Strategies of Four Major Suppliers*, Oxford: OUP, p 123.
[216] Art 2, Gas Act.
[217] Art 1, paragraph 1, sub n Gas Act.
[218] Art 2, paragraph 1, art 3 Gas Act.
[219] Witteveen-Hevinga [et al], (2000), 'Nader gewijzigd amendement van het lid Witteveen-Hevinga c.s. ter vervanging van dat gedrukt onder nr. 69', Tweede Kamer, 1999–2000, 26463, no. 81.
[220] Art 2b, Gas Act.
[221] Minister of Economic Affairs, (1999), 'Gaswet: Memorie van Toelichting', Tweede Kamer, 1999–2000, 26463, no. 3.
[222] Art 37, Gas Act.
[223] Minister of Economic Affairs, (2003), 'Wijziging van de Elektriciteitswet 1998 en de Gaswet ter uitvoering van richtlijn nr. 2003/54/EG, (PbEG L 176), verordening nr. 1228/2003 (PbEG L 176) en richtlijn nr. 2003/55/EG PbEG L 176), alsmede in verband met de aanscherping van het toezicht op het netbeheer (Wijziging elektriciteitswet 1998 en Gaswet in verband met implementatie en aanscherping toezicht netbeheer)', Tweede Kamer, 2003–4, 29372, no. 1.
[224] Art 3c, Gas Act.

compliance officer was appointed. The finance department is responsible for internal control. The external auditor is required to verify compliance independently. Failure to comply might result in disciplinary measures, job-loss or even criminal prosecution of individual employees.[225]

With the separation from what became Gasterra, the dynamics of this requirement changed. Since the trading company is no longer affiliated to the network company, information leakages may seem less damaging to competition. However, GTS argued in its 2007 compliance report that the regulation continues to bear relevance in the light of Gasunie's Participations and Development unit.[226] This is the unit through which Gasunie *inter alia* participates in infrastructure projects and offers consultancy and other technical services.[227] Gasunie's investment decisions would gain in accuracy if access to GTS's knowledge of transmission data were granted. However, more ways of advantaging the company seem possible. For instance, Gasunie can be directly privileged when granting consulting contracts. Notwithstanding legal issues facing the *company* regarding anti-competitive activities, no responsibility in relation to the sharing of information is placed upon *employees*. The question can, however, be asked whether the separation between GTS and Gasunie is necessary. As neither company trades nor produces gas, their integration may have only a limited impact on competition, if any.

A second branch of the 'Chinese wall' is the accounting separation requirement. The applied depreciation methodology has to be recorded and explained, whereas changes therein have to be justified. The accounting system is required by law to be cost-reflective.[228]

The services required of the TSO affect tariffs, as the quality of service, maintenance and investment levels determine costs. The TSO is required to provide sufficient capacity to satisfy total demand, and has to report on this matter to DTe every two years.[229] It has, furthermore, to operate the network economically, while guaranteeing safety, efficiency, and reliability, and must also consider the environment. Information needed for efficient access

[225] GTS, (2006), 'Reglement'. Available at: www.gastransportservices.nl/corporate/wettelijke_taken/
[226] GTS, (2007), 'Nalevingsverslag Reglement'. Available at: www.gastransportservices.nl/corporate/wettelijke_taken/
[227] Gasunie, (2006), 'Jaarverslag 2005'. Available at: www.nvnederlandsegasunie.nl/media/pdfs/Gasunie-jv2005.NL.pdf, pp 62–6.
[228] Art 32, Gas Act.
[229] Art 8, Gas Act.

must be provided to users. The system should be kept in a good state of repair, and connections between grids have to be established.[230] The TSO also has to take measures to ensure security of supply, balance the network, provide blending services within reason, and offer flexibility services for as long as Gasterra holds a dominant position in relation to Groningen production flexibility. These requirements seem, if anything, an attempt to disprove the rather well-established fact that cakes cannot be both had and eaten. For instance, if no capacity shortages are permitted, investments have to be designed to meet a very high-demand scenario, but this is not economically efficient. A balance needs to be struck, and the Gas Act is not particularly instructive in this regard.

The TSO proposes tariff structures, as well as their composition and calculation methodology, to DTe.[231] Regulations regarding the contents of this proposal are laid down by Ministerial Decree, unless a fifth of the members of one of the chambers of parliament requires the matter to be arranged by national law.[232] The DTe consequently takes a regulatory decision regarding these matters, while taking into account the proposal, the need for reliable and efficient gas supply, the importance of the development of trade, the necessity to enhance efficiency, and the quality of services offered by the TSO and the Directive (Article 12f decision).[233] Again, a trade-off exists between various policy objectives, for instance between efficiency and reliability. A new decision can be initiated by the TSO or by the DTe on its own account.[234]

The DTe takes decisions in relation to regulatory methodology, and in particular the calculation of X over periods of three to five years (Article 82 decision). The DTe applies this methodology to calculate X annually. Then, combining this with the Article 12a decision, the TSO sends the DTe a tariff proposal before 1 September for the following year. If no tariff is determined by 1 January, the previous year's tariffs remain applicable until a decision is taken. The DTe is allowed to correct the tariffs if those in the year or years preceding the regulated year have been changed by court order, were established based on incorrect information, or were based on inaccurate estimates.[235]

[230] Art 10, Gas Act.
[231] Art 12a, Gas Act.
[232] Art 12, Gas Act.
[233] Art 12f, Gas Act.
[234] Art 12c, Gas Act.
[235] Art 82, Gas Act

The second regulatory layer is the Ministerial Decree regarding the Article 12f decision. [236] For the valuation of assets, either indexed historical, or replacement costs are used after subtraction of depreciation. The tariffication system proposed by the TSO has to specify the types of services the costs represent, as well as the tariff drivers. An issue that was taken out of the draft version is tariff benchmarking, which may be of importance, for reasons to be discussed later. The Decree was not considered suitable to deal with this issue and further negotiations were announced.

The established tariffication principle is, mirroring EU regulation, cost-reflectivity. Some guidance concerning the question of what the relevant costs are can be found in various principles, and especially the prescribed depreciation methodology. However, many questions, including the tariff structure, are left to DTe.

In 2005, DTe published transmission Guidelines in which entry–exit continued to be the preferred method of transmission pricing.[237] Combinations of entry and exit capacity are flexible, and all terminals located on the border are entry or exit points.[238] The fact that DTe was able to make this choice reflects the general nature of the Gas Act, and the resulting independence of the regulator. Indeed, when it was debated in Parliament, the Minister of Economic affairs instead defended the existing distance-related tariffs.[239] It seems appropriate for the government to leave the regulatory authority freedom to make its own policies, especially as the network is fully owned by the state. The basic services that GTS has to offer include the offering of firm capacity, interruptible capacity, basic – firm – backhaul and interruptible backhaul for exit points on the Dutch border. [240] The conditions and tariffs for interruptible capacity have to be transparent, objective, non-discriminatory and reasonable.[241] GTS must offer at least yearly, monthly, and daily capacity. The maximum duration is five years.[242]

[236] Minister of Economic Affairs, (2005), 'Regeling inzake tariefstructuren en voorwaarden gas'. Available at: www.dte.nl/images/Regeling%20inzake%20tariefstructuren%20en%20voorwaarden%20gas_tcm7-15341.pdf
[237] Dte, (2005), 'Richtlijnen Gastransport 2005'. Available at: www.dte.nl/images/12_19339_tcm7-4517.pdf
[238] Art 5, Guidelines.
[239] Minister of Economic Affairs, (2000), 'Regels omtrent het transport en de levering van gas (Gaswet): Brief van de Minister van Economische zaken', Tweede Kamer, 1999–2000, 26463, no. 56.
[240] Art 2, paragraph 1, Guidelines.
[241] Art 3, Guidelines.
[242] Arts 4 and 4a, Guidelines.

The guidelines are also designed to stimulate access to both the primary and secondary capacity markets. In particular, various conditions, such as the bundling of services, or the tying of capacity to other services, are not allowed.[243] Also, clauses limiting the transferability of capacity are prohibited, although GTS is permitted to require the capacity seller to guarantee that any buyer will fulfil its obligations.[244]

Tariffs for capacity of different durations have to stand in a 'reasonable' relation to each other. The availability of capacity of different durations may be reflected in the tariffs. It seems, however, not implausible that availability largely depends on the contracts closed by GTS. For instance, if it offers many monthly contracts, daily capacity will be in shorter supply. A distance-related short haul-discount is permissible for the *ex ante* combining of entry and exit points. The tariffs have to take backhaul flows into account.[245] The possibility of benchmarking tariffs is provided to prevent artificial diversion of European gas flows.[246]

The Article 12f decision is laid down in the Tariff Code, last changed in 2007.[247] In August 2005, an Article 82 decision was taken,[248] resulting a month later in a value for X. However, GTS successfully challenged the latter two decisions in court, on the grounds that the decision only specified a total revenue ceiling, leaving much uncertainty regarding actual tariffs.[249] This was particularly problematic as the Tariff Code allows deviation from the cost-reflectivity principle if effective P2P competition existed.[250] The Brattle Group was then commissioned to report on whether such competition existed.[251] In the absence of a new Article 82 decision, the 2006 tariffs retained their applicability.

On 25 April 2008, the Minister of Economic Affairs ('the Minister') sent a letter to the Second Chamber, concerning changes to various levels of the regulatory body, particularly

[243] Art 9, Guidelines.
[244] Art 10, Guidelines.
[245] Art 23, Guidelines.
[246] Art 22, Guidelines.
[247] DTe, (2007), 'Tarievencode Gas'. Available at: www.nma-dte.nl/images/Bericht%20Staatscourant%20101928-22_tcm7-77422.pdf
[248] DTe, (2005), 'Methodebesluit'. Available at: www.dte.nl/images/Methodebesluit%20X-factor%20GTS%20101847-65_tcm7-77774.pdf
[249] *GTS* v. *NMa*. College van Beroep voor het Bedrijfsleven, 30 November 2006, LJN: AZ3365.
[250] Art 3.4.3 Tariff Code.
[251] The Brattle Group, (2007), 'Assessing Pipe-to-Pipe Competition: Theoretical Framework and Application to GTS'. Available at: www.dte.nl/images/Assessing%20Pipeline%20To%20Pipeline%20Competition%20Theoretical%20Framework%20And%20Application%20to%20GTS_tcm7-112111.pdf

the Gas Act and the Ministerial Decree – these changes were to be expected at the end of 2008.[252] However, certain parts of the proposed regulatory changes were rushed through in summer 2008. They chiefly involve the RoI. Interestingly, the legal basis for the Ministerial Decree[253] chosen was *not* the Gas Act, but the Competition Act. It may strike observers of the Dutch gas market as interesting that one of the often explicitly mentioned purposes of these regulatory changes is the development of a gas hub within the country, rather than motives relating to, for instance, cost-reflectivity, or to the promotion of competition.

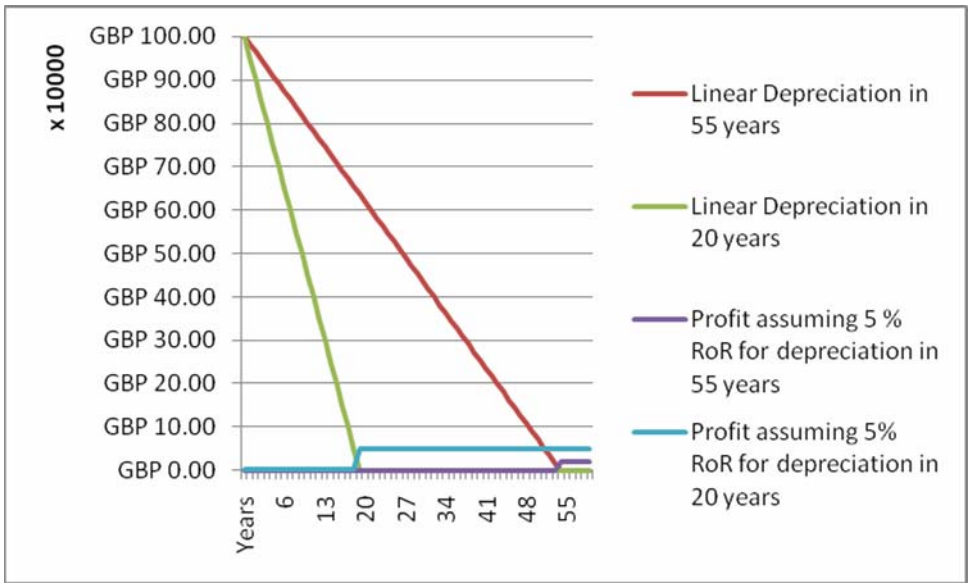
6.3 Costs

As the network is owned by Gasunie, not the TSO, its value is accounted for in the annual report of the former. GTS is mandated by Gasunie to operate the network at its risk and expense. The principle underpinning the network valuation is historical costing, using indexed linear depreciation and assuming no residual value after depreciation. A correction to the resulting book value can be made if it deviates significantly from the replacement costs, corrected for depreciation.[254]

At the core of the cost debate is the expected lifetime of the network, as this is one of the main cost factors. Figure 1 illustrates profits and depreciation costs using historical costing for a £1.000.000 pipeline under 20 year and 55 year depreciation scenarios, assuming an actual life span of 60 years, and that depreciation costs are the TSO's only costs, excluding both taxes and inflation, and assuming that X is set in a way that generates a RoR of 5 per cent of the standardized depreciation value throughout the actual lifespan. The last assumption is vulnerable to challenge on the grounds that X may be set independently from any target RoR. Although this is true, it is likely that the regulator will always include *some* RoI, even if he does not base X on its calculation, and therefore any rate falling within a range of what is common in practice may be illustrative.

[252] Minister of Economic Affairs, (2008), 'Voorzienings – en leveringszekerheid energie: Brief van de Minister van Economische Zaken', Tweede Kamer, 2007–8, 29023, no. 55.
[253] Minister of Economic Affairs, (2008), 'Beleidsregel uitoefening door de raad van bestuur van de mededingingsbevoegdheid, bedoeld in artikel 82, tweede lid, van de Gaswet', Staatscourant 11 juli 2008, nr. 132 / pag. 15.
[254] Gasunie, (2007), 'Jaarverslag 2006'. Available at: www.nvnederlandsegasunie.nl/JV/2006/Gasunie-jaarv.2006.NL.pdf, p 83.

Figure 1: Linear Depreciation and TSO Profits Excluding Taxes and Inflation



A shorter depreciation period benefits the TSO for two reasons. First, the yearly depreciation costs are higher and so, therefore, are the returns, both during and after the depreciation period. Furthermore, the faster the asset is written off, the earlier revenues-without-depreciation-expenses are generated. In the highly simplified model of Figure 1, total revenues using a 20 years depreciation period are over 13 times larger than when depreciation is spread over 55 years.

One limitation of this model is that the excessive profits after depreciation are subject to political uncertainty. They could be captured by the regulator or the government through windfall taxes. Adding inflation would decrease the value of both the yearly depreciation and the revenues. The uncertainty regarding these parameters makes the size of the described effect more difficult to determine. Nevertheless, short depreciation periods are beneficial to the TSO in the long run. During depreciation, however, this does not become apparent from the annual report of the TSO as excessive depreciation costs disguise the profits – important for political reasons, as excessive profits are likely to lead consumers to call for tariff reductions. However, after the assets are fully depreciated, a 20 year precedent for the constantly used price levels is set which reduces exposure to such political problems.

Over the accounting year for 2004, in which GTS was established, pipelines were depreciated over 20 years.[255] In accounts for the following year, the assumed lifespan, for accounting purposes, was *doubled* to 40 years, which resulted in a decrease in depreciation costs for pipelines and compressor stations of 57.9–13.3 and 32.5–7.0 million Euros respectively.[256]

DTe set the expected lifespan at 55 years in its 2005 Article 82 decision.[257] This means that, had it been accepted by the court, depreciation levels underpinning the tariff would have been lower than those accounted for in the annual report. This has the politically significant effect of limiting the TSO's accounting profits, whereas post-depreciation revenues based on 55 years depreciation were relatively secure. Interestingly, GTS argued in favour of an *extension* of the depreciation period on two grounds. First, it claimed that its value as a company would be understated. It is however not GTS's own value, but that of its parent company that is at stake. Second, it claimed that the incentive to replace assets before the end of their actual lifespan would be reduced, as 'the owner will no longer earn a return on his assets'.[258] Although the latter argument suits RoR regulation, it does not hold in an RPI-X context. GTS argued that depreciation periods should be different for new and existing pipelines: 55 for the former and 65 for the latter.

Despite the fact that the network is owned by the state, the Minister decided to take a position in this debate. The letter in which she first does so was sent also on behalf of the Minister of Finance, who controls the state's shares in Gasunie.[259] Under the Decree, which is based on competition law ('Competition Decree'), new investments should be fully written off over 20 years. As a justification for this treatment, the risk relating to new investments was highlighted. Given that the Minister proposed these measures in the context of enhancing security of supply through increased capacity, she seemed to have followed arguments derived from Figure 1, rather than those put forward by GTS regarding the network owner's

[255] Gasunie, (2005), 'Jaarverslag 2004'. Available at: www.nvnederlandsegasunie.nl/JV/2004/Gasunie-jaarv.2004.NL.pdf, p 51.
[256] Gasunie, (2006), 'Jaarverslag 2005. Available at: www.nvnederlandsegasunie.nl/media/pdfs/Gasunie-jv2005.NL.pdf, p 101.
[257] Nma, (2005), 'Bijlage C bij X-factorbesluit GTS'. Available at: www.dte.nl/images/X-factor%20besluit%20GTS%20Bijlage%20C_tcm7-78331.pdf
[258] Nma, (2005), 'Bijlage D bij X-factorbesluit GTS. Available at: www.dte.nl/images/X-factor%20besluit%20GTS%20Bijlage%20D%20Zienswijzen_tcm7-78332.pdf
[259] Minister of Economic Affairs, (2007), 'Voorzienings- en leveringszekerheid energie: Brief van de Minister van Economische Zaken', Tweede Kamer, 2006–7, 29023, no. 37.

preference for a shorter depreciation period. Existing pipelines were judged to merit a different treatment, depreciation over 55 years.

A regulatory issue which was announced to Parliament, but not implemented in the Competition Decree, is that there should not be unlimited compensation of costs. Gasunie would be required to present the business case for new investments to the DTe, which would perform a 'quick scan'. If the investment was found to be uneconomic, a cost-benefit analysis would be drafted, after which it would be the Minister who granted or denied approval to the investment. DTe would consequently calculate the corresponding tariff changes.[260] It is common for regulators to judge investments, making comparisons with pipelines across Europe. However, determining whether the increase in capacity is necessary in the first place, especially *ex ante,* is different, and much more difficult. The ability to thus limit the Averch–Johnson effect seems limited. The fact that the matter was, nevertheless, not included in the Decree may be related to time pressure, or to the Minister's gas-hub ambitions.

Under the – seemingly reasonable – assumption that the state does not cross-subsidize Gasterra through profits made by Gasunie, competition should not be significantly impeded if an overstatement of the cost base were to result in excessive tariffs. Nevertheless, the government would gain rents at the expense of consumers i.e. tariffs morph into taxation. Government spending also benefits consumers. The cost accounting base is therefore largely a question of distributional equity between those with above-average gas demand (industrial users), foreigners who do not benefit from the Dutch government's spending, and the general public.

The idea of cost over-estimates in the Netherlands may appear strange to those familiar with the country's relative tariff position. Ever since 2003, GTS has commissioned an independent consultant to compare its tariffs with those in other European countries yearly. The Netherlands has, almost without exception, ranked amongst the cheapest.[261] However, this is a relative indicator from which no conclusive evidence regarding the absolute value may be

[260] Minister of Economic Affairs, (2007), 'Voorzienings- en leveringszekerheid energie: Brief van de Minister van Economische Zaken', Tweede Kamer, 2006–7, 29023, no. 37.
[261] See for instance the 2007 report: Arthur D. Little Ltd., (2007), 'West European Gas Transmission Tariff Comparisons: Graphical appendix of the report to Gas Transport Services (GTS)'. Available at: www.gastransportservices.nl/corporate/publicaties/studies/

derived. Furthermore, this relative position may also change if transmission costs were to increase significantly.

6.4 Cost-reflectivity

The Dutch tariffication system is based on RPI-X. In the Article 82 decision noted above, a total revenue cap was proposed, using a 5 million Euros bandwidth relating to volume development.[262] This is different from Littlechild's model, which produces a price index. However, also regarding cost reflectivity, the Minister has proposed a significant change. Given the Dutch network's relative tariff position, it is an attractive country through which to divert flows, especially from and to Germany. This effect was analysed in 2001 by Jepma[263] and henceforth bears his name. He further elaborated upon the analysis in a 2004 report commissioned by GTS.[264] The Jepma effect has sparked debate about the cost-reflectivity principle. The way in which costs are converted into tariffs, therefore, merits separate discussions about tariffs that do and do not reflect costs.

With the Competition Decree, Dutch regulation became RoR regulation, as the Minister intends to lay down the RoI. Regarding new investments – those written off in 20 years – tariffs should aim to guarantee a real RoI of 7 per cent before taxes. Tariffs for existing pipelines on the other hand should generate a 5.5 per cent real RoI before taxes.[265]

Establishing these target RoIs in the Ministerial Decree amounts to a shift in various directions. The role of DTe is reduced from that of a policy maker, whose rules the state-owned GTS had to follow, to a body analysing the business cases underpinning new investments, and performing the more administrative task of 'operating the formulae' to ensure they result in the predetermined RoI. This is problematic for political, legal, and economic reasons.

[262] Nma, (2005), 'Bijlage A bij X-factorbesluit GTS'. Available at: www.dte.nl/images/Bijlage%20A%20rekenkundige%20beschrijving%20bij%20methodebesluit%20X-factor%20GTS_tcm7-77775.pdf
[263] Jepma, (2001), 'Gaslevering onder druk: invloed van de Richtlijnen van de DTe op de Nederlandse gasstromen'. Available at: www.gastransportservices.nl/corporate/publicaties/studies/
[264] Jepma, (2004), 'Hydra: Aantasting van leveringszekerheid'. Available at: www.gastransportservices.nl/corporate/publicaties/studies/
[265] Minister of Economic Affairs, (2008), 'Beleidsregel uitoefening door de raad van bestuur van de mededingingsbevoegdheid, bedoeld in artikel 82, tweede lid, van de Gaswet'. Staatscourant 11 juli 2008, nr. 132 / pag. 15.

A conflict of interests is therefore created within the government. On one hand it is desirable to generate returns from network ownership, which could be achieved through a high RoI. On the other, tariff increases negatively affect consumers, and hence the government. The fact that the Minister of Economic Affairs has consulted, and also announced, the proposed changes on behalf of the Minister of Finance underlines this problem. Centrally planned (aspects of) economies are not inherently bad in practice if well-planned. However, if the network owner – the state – partly takes over the role of the regulator, the independence and therefore the quality of the resulting regulation is at best less certain.

The independence of DTe is not only politically important. The Second Directive requires that an NRA is set up that is '*wholly independent from the interests of the gas industry'*.[266] If this is interpreted to include the TSO, the Netherlands would breach its European obligations by allowing the owner of the network to influence regulatory decision making. The Article requiring the independent NRA elaborates upon its obligations. These include that it should establish whether the TSO operates in accordance with the requirements of the Directive. From this it may be concluded that the NRA should be independent from the TSO, meaning that the Minister's involvement may be called a violation of EU law.

The legal grounds at the national level for the Minister's proposals could perhaps also be challenged, although this has not happened thus far. A Ministerial Decree is meant to regulate the Article 12f, not the Article 82, decision. The question of whether the proposed decisions about the appropriate RoR can be made in the Decree therefore amounts to a question of the difference between the two decisions.

The Competition Decree amounts to a change towards RoR regulation. It is possible to set either X or the RoI exogenously, not both – although one parameter can of course be set with a target value for the other in mind. In practice, X is often calculated backwards from a target RoI. A choice for regulating this RoI is indeed made. The Gas Act charges the DTe in Article 82 with the obligation to establish an *efficiency discount* – X, after consulting the TSO and network user organizations.[267] Although it is common practice to set X based on a target RoI, the Gas Act, including the obligation to consult industry, suggests that DTe should be free to

[266] Art 25, 2003/55/EC.
[267] Art 82, paragraph 4, Gas Act.

develop policy regarding the target rates, which it is, speaking strictly legally. However, the Minister has taken the Competition Act as the legal basis to determine the use that DTe makes of this power, thereby circumventing the Gas Act. It could perhaps be argued that this violates the spirit and structure of the Act and should, on these grounds, be considered illegal.

A well documented problem of RoR regulation is the Averch–Johnson effect. As described above, it falls upon DTe to determine *ex ante* whether investments are – to use corresponding terminology – used and useful. It is unclear what the impact of this change will be on the TSO's obligation to guarantee sufficient capacity. Surely, it cannot be held accountable for shortages if the regulator or the Minister did not allow it to make the necessary investments. Although the Minister is subject to parliamentary scrutiny, determining whether investments are used and useful is a rather technical procedure. On the other hand, capacity shortages are readily apparent and politically significant. If the TSO cannot be held responsible, the Minister is the more likely suspect. Both the TSO and the Minister are therefore subject to incentives to overinvest. However, the negative political consequences of such incentives may be outweighed by the positive effects of network investments, if the creation of a gas hub is a core ambition.

The changes to the Dutch regulatory environment should, moreover, be seen against the backdrop of the Jepma effect, the debate about which has interacted, if not mixed with P2P competition. It is arguable whether joint discussion of these issues is valid.

Gas flows can be divided into four categories. The first are flows that qualify as transit for both the country from whence they came and to which they are flowing, for example Norwegian gas flowing through Germany, the Netherlands, and again Germany into Austria. The second only qualifies as transit for the Netherlands, such as flows from the north of Germany, through the Netherlands to the south of Germany. A third type of flow is import/export: gas produced or consumed in the Netherlands. Lastly, there are internal flows, such as Groningen gas transmitted to the south of the country.[268] In 2001, two major flow directions were of particular importance to the Dutch grid: the north–south and the west–east corridors. Gas flows through the latter were, at the time, mainly sourced from the UK and transited through Belgium. In the light of declining reserves in the UK, the main problem by

[268] Jepma, (2001), 'Gaslevering onder druk: invloed van de Richtlijnen van de DTe op de Nederlandse gasstromen'. Available at: www.gastransportservices.nl/corporate/publicaties/studies/, p 22.

the time of Jepma's 2004 study lay in the north–south direction. As Groningen is located in the far north-east of the country, north–south flows are traditionally significant. If flows of the first and second kind, sourced from, in particular, Germany, are diverted through the country, capacity shortages may occur, which would be a threat to the security of supply of national consumers, particularly in the south. Various factors exacerbate these problems. They include: capacity requested for speculative reasons to drive up the price, the investment-impeding effect of uncertainty regarding future demand for capacity, and potential shortages on the German grid which could drive more shippers to the Dutch grid.[269]

A possible, and suggested, solution to this problem is tariff benchmarking. Congestion problems could be solved if Dutch tariffs were sufficiently high to make the cost of shipping through the Netherlands comparable to, or higher than, shipping over a much shorter distance through Germany. In the Ministerial Decree, no choice for or against benchmarking was made.[270] The DTe's 2005 Guidelines did, indeed, stipulate that GTS's tariffs should be comparable with EU tariff developments:

> *'Regarding the tariff, the development in the European Union should be guiding, so that no artificial flow diversions can take place on the European gas transport market' (emphasis added)*

However, in the same article a tariff *reduction* of 5 per cent over 2004 was required for firm capacity and quality conversion, which may only exacerbate the Jepma effect, although an increase in imbalance charges was prescribed as well.[271] The Article 12f decision does not explicitly regulate the Jepma effect, although it does provide the option of tariff benchmarking if P2P competition exists, which may or may not cover the Jepma effect.[272]

No agreement exists between GTS and DTe about whether the Jepma effect even exists. The former remarks in a 2006 press statement:[273]

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[269] Jepma, (2004), 'Hydra: Aantasting van leveringszekerheid'. Available at: www.gastransportservices.nl/corporate/publicaties/studies/
[270] Minister of Economic Affairs, (2005), 'Regeling inzake tariefstructuren en voorwaarden gas'. Available at: www.dte.nl/images/Regeling%20inzake%20tariefstructuren%20en%20voorwaarden%20gas_tcm7-15341.pdf
[271] Art 22, Guidelines.
[272] DTe, (2007), 'Tarievencode Gas'. Available at: www.nma-dte.nl/images/Bericht%20Staatscourant%20101928-22_tcm7-77422.pdf, p 21.
[273] Translated from: GTS, (2006), 'Reactie GTS op perspublicaties over mogelijke congestie in gastransportsysteem'. Available at: www.gastransportservices.nl/corporate/actualiteit/512099/

> *'We find the ease with which the DTe [...] questions the seriousness of the Jepma effect disturbing, with a view to security of supply'*

Both parties commissioned studies; GTS by ECN, a consulting company[274] as well as the 2004 Jepma report and, albeit after the court ruling revoking its Article 82 decision, DTe by the Brattle Group[275].

The ECN report uses the Gas mArket System for Trade Analysis in a Liberalizing Europe (GASTALE) model. It is static in terms of production and transmission capacity, distinguishes between three seasons and allows different behaviour of market players to be modelled. It provides a projection of a stable volume and price situation. The study finds that, indeed, an inverse relationship exists between the differential between German and Dutch transmission prices, and the demand for capacity through the Netherlands.

DTe had both the ECN, and second Jepma studies evaluated by RBB Economics, a consulting company, which finds that, for a variety of rather technical reasons, neither report suffices to conclude that the tariff differences would threaten security of supply through flow diversions.[276]

The Brattle Group was invited to study whether effective pipeline-to-pipeline competition exists. This question is different from that underpinning the ECN and Jepma reports, as the Jepma effect may fail to constitute P2P competition, or P2P competition may exist outside the Jepma boundary. However, it seems particularly relevant and logical for the DTe to ask this question as, under the Tariff Code (as well as EU regulation) when this condition is fulfilled, tariffs may be based upon those in surrounding countries with which competition exists.[277] The first step taken in the report is to define what constitutes such competition:[278]

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[274] Lise, W. [et al.], (2005), 'Druk in de gasleiding: Verband tussen tarieven voor gastransport, omleidingsstromen en congestive in Nederland', ECN. Available at: www.gastransportservices.nl/corporate/publicaties/studies/

[275] Brattle Group, (2007), 'Assessing Pipe-to-Pipe Competition: Theoretical Framework and Application to GTS'. Available at: www.dte.nl/images/Assessing%20Pipeline%20To%20Pipeline%20Competition%20Theoretical%20Framework%20And%20Application%20to%20GTS_tcm7-112111.pdf

[276] RBB Economics, (2005), 'De regulering van gastransporttarieven en leveringszekerheid:Evaluatie van de studies van ECN en prof. Jepma'. Available at: www.dte.nl/images/RBB%20rapport_tcm7-78739.pdf

[277] Art 3.4.3, Tariff Code.

> *'In our view P2P competition is effective if it means that in the absence of cost-based tariff regulation GTS would be constrained by competitive forces from raising prices 'significantly' above current levels'*

It seems that this constraint would exist if raising the tariff would worsen the relative attractiveness of the Dutch – compared to the German – grid, and that this would be an effect that is perceived as sufficiently negative for it to be non-economic for the TSO to raise its tariffs. This would be the case if the cost to shippers of transiting the gas through Germany would be exceeded by the costs of transiting the gas through the Netherlands after a Dutch increase. Assuming that the same definition applies to Germany, Table 1 can be constructed.

Table 1: The Brattle Group's definition of P2P competition

	Costs to shippers of transmission through the Netherlands (NL) and Germany (DE)	**P2P Competition in NL using 'Brattle definition'**	**P2P Competition in DE using 'Brattle definition'**
1	NL = DE	Yes	Yes
2	NL > DE	Yes	No
3	NL < DE	No	Yes

With rational players and sufficient available capacity in the Netherlands, situation 3 may result in the Jepma effect. The Brattle Report considers:[279]

> *'there is a link between the existence of P2P competition and the use of higher tariffs to avoid the alleged Jepma effect on security of supply. Raising transit tariffs to choke off demand for transit is more likely to have the desired effect if there are competing networks that have/can provide additional capacity. However, this link is not enough to ensure that the Regulation would allow for higher tariffs to choke off demand. The text of the Regulation suggests rather*

[278] The Brattle Group, (2007), 'Assessing Pipe-to-Pipe Competition: Theoretical Framework and Application to GTS '. Available at: www.dte.nl/images/Assessing%20Pipeline%20To%20Pipeline%20Competition%20Theoretical%20Framework%20And%20Application%20to%20GTS_tcm7-112111.pdf, p 1.
[279] Ibid. p 9.

> *clearly that benchmarking is relevant to ensure that tariffs reflect efficient costs and provide appropriate returns and incentives for investment.'*

From the last sentence, it may be concluded that the definition laid down at the start of the report differs from the definition actually used. Efficient cost-reflection in the Netherlands is not guaranteed in the, of course strictly hypothetical, case that German transmission tariffs are excessive. Only when pipelines in *both* countries are subject to competition is cost-reflectivity ensured. Even if the Jepma effect were proven, no P2P competition would be established by that fact alone, under the 'actually used' Brattle definition.

This distinction has, however, not exactly blossomed in the Dutch regulatory debate. The DTe's 2005 Guidelines stipulate that European tariff developments should evolve *so that no artificial flow diversions can take place*.[280] This does not say that as soon as such diversions take place, benchmarking is appropriate. However, the remark seems at least closely related to the Jepma effect. The Tariff Code, however, requires P2P competition if benchmarking is to be used.[281] As both are DTe documents it seems unclear how it views the relationship between the two phenomena.

However, the clearest evidence for a mixed debate comes from the Minister:[282]

> *'The tariffs will reflect the real costs made by the TSO, while also stimulating investment. From this cost-reflectivity principle may be deviated to let tariffs converge with those of internationally competing networks. These principles are laid down in European regulation [reference is made to the Second Directive and the Access Regulation]. I shall therefore base the regulation on cost-reflectivity. Only if the chance exists that the transmission of gas for Dutch consumers is displaced by transit-gas (the so-called Jepma effect) will the Regulator decide to set higher tariffs than those based on cost-reflectivity.'*

Here, the Jepma effect is explicitly stated as a case in which European regulation allows benchmarking.

[280] Art 22, Guidelines.
[281] Art 3.4.3, Tariff Code.
[282] Minister of Economic Affairs, (2007), 'Voorzienings- en leveringszekerheid energie: Brief van de Minister van Economische Zaken', Tweede Kamer, 2006–7, 29023, no. 37.

The Dutch debate seems to suffer from a lack of clarity at the European level, regarding the situations that justify the benchmarking of tariffs: one of the regulatory gaps. Arguments can be found both for and against the permissibility of Jepma based benchmarking.

Article 3 of Regulation 1775 allows benchmarking 'where appropriate'. This should be interpreted in the light of Recital 7:

> *'In calculating tariffs for access to networks it is important to take account of actual costs incurred, insofar as such costs correspond to those of an efficient and structurally comparable network operator and are transparent, as well as of the need to provide appropriate return on investments and incentives to construct new infrastructure. In this respect, and in particular if effective pipeline-to-pipeline competition exists, the benchmarking of tariffs by the regulatory authorities will be a relevant consideration.'*

GTE rightly pointed out in the context of the Madrid Forum that the possibility of tariff benchmarking is not strictly limited to P2P competition cases.[283] However, the Recital does place its use in the context of efficiently incurred costs, RoI and investment incentives. The question whether situation 3 in table 1 could justify benchmarking then hinges upon whether the three factors mentioned would therewith be departed from.

It could furthermore be argued that the burden of determining German compliance with EU regulation falls upon the European Commission, not the Dutch regulator. As the EU regulatory system is based upon the cost-reflectivity principle, and DTe may assume German compliance unless and until the Commission finds otherwise, benchmarking of the Dutch tariffs with those in Germany should be assumed a 'relevant consideration'.

An argument for the contrary position is that if gas flows from North Germany to South Germany through the Netherlands, the resulting increase in the transmission distance constitutes a sufficient indication that tariffs in Germany are excessive. However, the

[283] GTE, (2006), 'GTE Comments on the revised draft Explanatory Notes on Tariffs'. Available at: http://ec.europa.eu/energy/gas/madrid/doc_11/presentations/2tariffs/22_gte.pdf

underlying assumption is that both lines should be capable of achieving comparable costs, which may not necessarily be the case.

Arguments in both directions may be drawn from Article 17 of the explanatory notes:[284]

> *'In the event that benchmarking of tariffs is applied, the tariffs emerging may deviate from those that would accrue from a pure cost-based approach. Bearing in mind that cost-based tariffs might be the preferred option to promote the underlying objectives of the Regulation and Directive 2003/55/EC (to establish a well functioning internal market for gas) such an approach seems to be justified, if these objectives are thought to be better achieved by tariffs emerging from benchmarking. Therefore, the outcome of a benchmarking of tariffs by regulators may be taken into account where there is effective pipeline-to-pipeline competition and where tariffs based on actual costs incurred would distort this competition. The benchmarking therefore serves as a complementary method to the cost-based approach.' (emphasis added)*

This suggests that tariff benchmarking is justified when 'the objectives' of the Regulation and Directive are 'thought to be better served' through benchmarking. It is not clear who is to make this judgement, but it seems reasonable to assume that it is the NRA. The question then is *which* objectives should be better served, and how various objectives should be measured against each other to establish what qualifies as *better*. In the absence of EU guidance on this matter, the national Regulator can choose from the wide array of competing objectives provided. If cost-reflectivity is considered more important, Jepma based benchmarking may not be justified whereas, for instance, the objectives of security of supply and the need for incentives for investment would suggest otherwise.

An argument put forward by The Brattle Group is that the Jepma effect is based on the need for security of supply and that benchmarking on these grounds was 'not envisaged' in the Regulation.[285] Another part of EU regulation relates to the Directive concerning measures to

[284] Art 17, Explanatory notes.
[285] The Brattle Group, (2007), 'Assessing Pipe-to-Pipe Competition: Theoretical Framework and Application to GTS '. Available at:

safeguard security of natural gas supply.[286] It provides that Member States may take measures to protect the security of supply of various consumers.[287] The fact that a separate Directive exists to address the issue of security of supply seems to support the Brattle Group's argument.

The Minister informed the Second Chamber about the size of the required new investments. In 2005, GTS had evaluated demand and was able to sign 20 provisional contracts. She wrote on 29 March 2007 that these contracts should become binding on 1 April 2007 – one business day later. Norwegian gas producers had enquired after a tariff and landing plan in support of a possible decision to transit through the Netherlands. To fulfil these contractual obligations, GTS would have to make investments worth 1.1 bn Euros and an additional 0.7 bn to satisfy Norwegian demand.[288] A tension seems to exist between two stances of the Minister. He (a man was Minister at the time) argued in 2006 that it might be difficult to make the investments necessary to match demand if the '*increased demand is mainly caused by regulatory differences between Member States, as these cannot be controlled by investors'*.[289] It is then puzzling how a market analysis made in 2005 – before this conclusion was reached – could, in 2007, produce a market analysis on which a 1.8 bn Euro investment could be based. The problem of security of supply may, seen in this light, not be so severe as to justify deviation from the cost-reflectivity principle.

However, even if the Regulation should be interpreted to include the Jepma effect amongst the justifications for benchmarking, this is not what the Minister proposes. There is a difference between adapting national tariffs to those on a competing pipeline, and raising tariffs to a level laid down by Ministerial Decree designed, to use the Brattle Group's terminology, to *choke off demand for transit*. Moreover, if German tariffs were to decrease significantly – which would constitute a regulatory change that the Minister in 2006, rightly, considered an event beyond investors' control – Dutch tariffs would continue to reflect the same target RoI that was set based upon the current regulatory environment in Germany.

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www.dte.nl/images/Assessing%20Pipeline%20To%20Pipeline%20Competition%20Theoretical%20Framework%20And%20Application%20to%20GTS_tcm7-112111.pdf, p 5.

[286] 2004/67/EC.

[287] Art 4, 2004/67/EC.

[288] Minister of Economic Affairs, (2007), 'Voorzienings- en leveringszekerheid energie: Brief van de Minister van Economische Zaken', Tweede Kamer, 2006–7, 29023, no. 37.

[289] Minister of Economic Affairs, (2006), 'Visie op de gasmarkt: Brief van de Minister van Economische Zaken', Tweede Kamer, 2006–7, 29023, no. 22, p 12.

Various alternative solutions to the Dutch problem exist. The access Regulation requires TSOs to facilitate secondary trading of capacity rights.[290] If a deep and liquid market for such rights exists, the capacity availability problem is reduced to a pricing problem. The reason for this is that industrial consumers particularly, would take negative operating decisions if prices rose above certain thresholds. The physical aspect only becomes a problem when no more demand reduction can be achieved – a rather unlikely scenario. In the Jepma scenario, price responsiveness is enhanced as a result of the German alternative to transit through the Netherlands.

In May 2008, Anglo-Dutch energy exchange APX announced that it would facilitate the trading of day-ahead cross-border capacity.[291] If a capacity market functions well and covers both routes, the capacity costs on the secondary market should automatically converge, as a result of arbitrage. This might mean that Dutch consumers have to pay a premium to prevent diverted gas flows, if that were to lead to congestion in the Dutch network. However, contrary to the Minister's proposal of a market-blind rate, this premium will fluctuate according to market developments. Assuming static capacity, the consumer is therefore better off paying a premium on the secondary market than under the proposals as, assuming the Minister's RoI does indeed suffice to prevent diversion, the market price will not be higher than the new regulated price, whereas it can be lower in times of sufficient capacity.

Separate from the question of the efficient allocation of available capacity is that of capacity 'production' – investments. Capacity contracts are limited to a maximum of five years.[292] Given that tariffs are regulated on a yearly basis, it is not possible to contract further ahead. The Minister also proposed to change the Regulation to allow the closure of long-term fixed-tariff contracts, and rightly so. The TSO is obliged under the Gas Act to provide sufficient capacity to satisfy total demand. However, the provision of capacity is a different matter from decisions as to who will bear the investment risk. If longer term contracts are allowed, the TSO can organize open seasons to establish the extent to which shippers are willing and able to bear these risks. If the revenues are secured through long-term contracts it will be able to make the investments necessary. This contracted capacity can be traded in a secondary

[290] Art 8, 1775/2005/EC.
[291] APX, (2008), 'Gas Capacity Trading & Gas Storage Trading', press release, Available at: www.apxgroup.com/index.php?id=24&tx_ttnews[tt_news]=216&tx_ttnews[backPid]=94&cHash=49c91bdc74
[292] Art 4, Guidelines.

market, which will be particularly attractive in times when the market price of capacity is high. This means that when capacity is in short supply (and prices are therefore high), extra capacity will become available, and vice versa, which has a stabilizing effect on the market. It is perhaps for this reason that the Second Directive explicitly states that long-term contracts may continue to be concluded.[293]

6.5 Tariff structures

The entry–exit system is used. Further regulation of the tariff structure lies in the Article 12f decision: the Tariff Code.[294] The tariff driver is the volume of contracted capacity – not the actual usage. Tariffs vary with the duration, probability of interruption and types of service.

Firm capacity tariffs for all points, except exit points to regional distribution networks, are based on an annual tariff. Three periods are distinguished: December, January, and February are winter months, May to September are summer months; the rest are border-months. Monthly capacity tariffs are the yearly tariffs multiplied by 0.7, 0.2 and 0.1 respectively. The daily tariff can be derived from the latter by multiplying by $\frac{1}{15}$. Different tariffs exist for exit capacity to the regional network, depending on whether the user qualifies as a small consumer. The tariffs are averaged with those paid by the same user category at exit points that are similar in terms of contracted capacity. The result is more evenly spread cost allocation to consumers.

Interruptible capacity is sold at a discount, depending on the probability of interruption. Tariffs are reduced by 15 per cent or 30 per cent with probabilities of 0–5 per cent and 5–15 per cent respectively. Exit capacity to the regional grid is not treated separately. A tariff is published for backhaul capacity at the border. Discounts of 10, 15, and 30 per cent are given for interruption probabilities close to 0, 0–5, and 5–15 per cent respectively. Wheeling capacity is subject to a yearly set tariff, from which the monthly and daily tariffs can be derived, analogous to the calculation methodology for firm capacity at exit points other than those connecting to the regional grid. A special shorthaul tariff applies to transmission

[293] Art 18, paragraph 3, 2003/55/EC.
[294] DTe, (2007), 'Tarievencode Gas'. Available at: www.nma-dte.nl/images/Bericht%20Staatscourant%20101928-22_tcm7-77422.pdf

between predetermined entry and exit points located 50 km or less apart.[295] On top of these costs, a fixed connection charge is levied.[296]

A problem regarding cross-border issues exists relating to pancaking. All points located at the Dutch border where the German and Dutch grids are connected are entry or exit points.[297] Although the cost effect of these may be perceived as positive from a Dutch national perspective in the light of the Jepma effect, it also impedes competition and market integration.

[295] Art 3.2, Tariff Code.
[296] Art 3.3, Tariff Code.
[297] Art 5, Guidelines.

7 The UK[298]

Before the process of liberalization took off in the rest of Europe, it was already well advanced in the UK. The regulatory system that emerged in the UK is distinct from what would become the Dutch or any other mainland-European system.

7.1 UK gas

The UK gas industry has evolved over a long period into one of the two largest markets in Europe. In the 1930s, private companies and municipal undertakings supplied over 11 million customers with gas manufactured from coal. These were nationalized in 1949 and divided into 12 regional boards. Following the 1965 discovery of large quantities of North Sea natural gas, it was decided that a national high-pressure pipeline grid should be built and appliances converted to be compatible with natural gas. With the 1972 Gas Act, the British Gas Corporation (BGC) was established which took over the regional boards.[299]

Largely due to its plentiful reserves, the UK gas market has been able to rely heavily on domestic production. The interconnector which links the island with mainland Europe was therefore initially proposed to be uni-directional, destined to export British gas.[300] However, in 2004, the country reverted to being a net importer.

7.2 Regulation

Led by Margaret Thatcher, the process of privatization and liberalization began in the 1980s. The first public utility to be sold was British Telecom, in the context of which process RPI-X

[298] This section is entitled UK despite the fact that it refers only to the situation in Great Britain; Northern Ireland has its own regulatory regime.
[299] Newbery, D., (2000). *Privatization, Restructuring, and Regulation of Network Utilities,* Cambridge, MA: MIT Press, p 363.
[300] Futyan, M., (2006), *The Interconnector Pipeline: a key link in Europe's gas network*, Oxford: OIES, Available at: www.oxfordenergy.org/pdfs/NG11.pdf, p 23.

was developed. The company and its regulator, Oftel, would become the model for many sectors, including gas.[301] Privatization can serve different purposes, including de-nationalization and facilitating competition.[302] These objectives differ and cannot necessarily be, and in the case of BGC arguably were not, simultaneously achieved.

Opening the market to competition was a primary objective aimed for in the Oil and Gas (Enterprise) Act 1982. It removed BGC's legal monopoly on the usage of the pipeline grid. Those wishing to utilize the system applied to the Secretary of State. He would give directions regarding access, including the charges to be levied.[303] Access was based on negotiations. Nevertheless, no new entrants came into the industry. *Liberalization* was followed by *privatization* in the 1986 Gas Act. BGC became BG and privately owned. It was sold intact and given a 25-year licence to satisfy two-thirds of total gas demand – the vast majority of customers.[304] These were the so-called 'tariff customers', distinct from the non-tariff large users with a demand greater than 25,000 therms/pa who negotiated prices with BG. An office of gas regulation, 'Ofgas', was created (whose functions would later be fulfilled by the Office of Gas and Electricity Markets, 'Ofgem') and the Secretary of State appointed a Director General of Gas Supply.[305] Ofgas's main duties were to ensure that:

- suppliers would satisfy demand 'so far as it is economical to do so';
- the necessary investments could be made
- effective competition in transmission and storage would take place.[306]

Competition did not emerge for some years, as the vertically integrated BG holding long term contracts managed to foreclose much of the downstream market. Through its transportation monopoly, it was able gain insights into competitors' activities, which fed into the negotiations with customers. The price for gas was limited by the price of alternative fuels, which meant that areas where the company knew it faced little gas-to-gas competition could

[301] Parker, D., (2004), 'The UK's Privatisation Experiment: the passage of time permits a sober assessment', Munich: CESIfo.
[302] Kay, J.A. and Thompson, D.J., (Mar., 1986), 'Privatisation: a policy in search of a rationale', *The Economic Journal*, Vol. 96, No. 381, pp 18–32.
[303] Section 17, Oil and Gas (enterprise) Act 1982.
[304] Newbery, D., (2000), *Privatization, Restructuring, and Regulation of Network Utilities*, Cambridge, MA: MIT Press, p 364.
[305] Section 1, Gas Act 1986.
[306] Newbery, D., (2000), *Privatization, Restructuring, and Regulation of Network Utilities*, Cambridge, MA: MIT Press, p 364.

cross-subsidize others. Already in 1987, the Office of Fair Trading (OFT) referred the company to the Monopolies and Mergers Commission (MMC) in relation to supply to non-tariff customers. In this segment of demand, pricing was based on individual negotiations. The MMC established that BG had practiced 'extensive discrimination'. To remedy this situation, it required:

- the publication and linear application of the prices for firm and interruptible supply,
- the publication of further terms of common carriage,
- that BG would not be permitted to refuse supply based on the envisaged use, as well as a purchase restriction to 90 per cent of new gas supplies.[307]

The Minister adopted all the proposals except the final one, which was unilaterally adopted by the company itself. The Competition and Service (Utilities) Act 1992 further enhanced the powers of Ofgas and allowed the Minister to vary the 25,000 therms threshold.[308] He did so by reducing it to a tenth of the original, which cut 14 per cent of the volume covered by BG's licence.

Keen to prevent a further reference to the MMC, BG engaged in negotiations with the OFT. The company proposed to separate its transport and storage from its trading activities by creating BG T&S (later called Transco) and BG Trading. It would publish transmission tariffs that would be applied uniformly.[309] However, no agreement was reached regarding tariffs, and two references were made to the MMC in 1992. The first by the Secretary of State under the Fair Trading Act 1973, the second by Ofgas under the Gas Act 1986. In 1993 the MMC published two reports of similar content, although the scope of recommendations to Ofgas was restricted by what could be achieved through modifications of BG's licence, namely conduct, rather than structural regulation, as the regulator lacked the powers to adapt the

[307] MMC, (1988), 'Gas: A report on the matter of the existence or possible existence of a monopoly situation in relation to the supply in Great Britain of gas through pipes to persons other than tariff customers'. Available at: www.mmc.gov.uk/rep_pub/reports/1988/fulltext/232c01.pdf
[308] Section 37, Competition and Service (Utilities) Act 1992.
[309] Newbery, D., (2000). *Privatization, Restructuring, and Regulation of Network Utilities*, Cambridge, MA: MIT Press, p 366.

latter.[310] The report to the Secretary of State recommended ownership unbundling, or as the report called it: the 'divestment of BG's trading activities no later than 31 March 1997'.[311] However, the Department of Trade and Industry rejected this recommendation in order not to impede the introduction of competition through time-consuming restructuring efforts.[312] Two issues that had resulted in much debate were the asset base and the RoI. A decision on the correct basis of tariffs was complicated by the difference between the current cost accounting value (CCA) and the value of the grid, as derived from the price of BG's stock, The report made recommendations on this, as well as the RoI, but did not resolve these matters, which would be subject to a further reference to the MMC, resulting in a further report in 1997.[313]

Structural changes were made through the Gas Act 1995. Three separate licences were created for: suppliers, shippers, and transporters; licences for the first two could not be granted to holders of the last and vice versa.[314] In February 1997 the shareholders of British Gas decided to unbundle (demerge) into Centrica and BG/Transco – they took the step that the government had not taken despite the unbundling recommendations in the 1993 MMC report. BG restructured financially in 1999 to create the BG group. Lattice, the part of the company responsible for the network, demerged from the BG group in the following year. It would later be taken over by National Grid, which brought gas and power grids together under National Grid / Transco. The BG group focuses on development and wholesale supply. The BG group uses the brand BG internationally. Within Great Britain, Centrica is entitled to use the name. It supplies gas to homes and businesses, as well as maintaining *inter alia* important producing assets.[315] In the UK therefore, the story of ownership unbundling was more one of corporate decision making than government intervention.

[310] MMC (1993a), 'British Gas plc: Volume 1 of reports under the Gas Act 1986 on the conveyance and storage of gas and the fixing of tariffs for the supply of gas by British Gas plc'. Available at: www.mmc.gov.uk/rep_pub/reports/1993/fulltext/335c1.pdf
[311] MMC, (1993b), 'Gas: Volume 1 of reports under the Fair Trading Act 1973 on the supply within Great Britain of gas through pipes to tariff and non-tariff customers, and the supply within Great Britain of the conveyance or storage of gas by public gas suppliers '. Available at: www.mmc.gov.uk/rep_pub/reports/1993/fulltext/334c1.pdf
[312] Newbery, D., (2000), *Privatization, Restructuring, and Regulation of Network Utilities,* Cambridge, MA: MIT Press, p 368.
[313] MMC, (1997), 'BG Plc: A report under the Gas Act 1986 on the restrictions of prices for gas transportation and storage services'. Available at:www.mmc.gov.uk/rep_pub/reports/1997/399bg.htm#full
[314] Sections 5 and 6, Gas Act 1995.
[315] See for a schematic overview of the history http://bgplc.com/

The national transmission system is currently operated under a licence granted in October 2004 to Transco Plc,[316] which changed its name to National Grid in 2005.[317] Under section B of the licence, the onus is upon National Grid to propose the tariffication principle and structure to Ofgem. Additional rights and obligations were laid down in the Network Code.[318] This code would be regularly adapted and resulted in the Uniform Network Code (UNC), which is applicable to all system operators.[319]

The regulatory development in the UK thus followed a distinct path illustrating the difference between privatization and liberalization. Even though legislation was in place to liberalize the market at the time of privatization, the following years would be characterized by increasing restrictions and reductions of BG's privileged position. The difference between the situation upon privatization and that in the years which followed led one former BG chairman to remark that early shareholders had been conned.[320] Most of the developments at the EU level were introduced long after they had already been introduced in the privatized and liberalized British gas market. The similarity of the measures subsequently adopted by the EU suggests that the example set by the British was followed throughout the rest of Europe.

7.3 Costs

The MMC reports of 1993 and 1997 have been of particular importance to the methodology used to establish the relevant cost base. When BG was privatized in 1986, a discrepancy existed between the CCA value and that derived from its share value. The ratio of the latter to the former is the market-to-asset ratio (MAR). The MAR grew from 41 to 62 and 68 per cent upon privatization, in 1991, and 1992 respectively. As charges had been based on the CCA value, it was argued that the stock owners earned undue rents based on an asset which they had purchased at a price which proved to be substantially below market value. By the time of the 1993 enquiry, both BG and Ofgas agreed that the MAR had to be taken into account. The

[316] Ofgem, (2004), 'Gas Act 1986 Section 7: Gas Transporter Licence for Transco PLC'. Available at: http://epr.ofgem.gov.uk/document_fetch.php?documentid=12152
[317] History of the National Grid is available at: www.nationalgrid.com/corporate/About+Us/Our+History/
[318] Newbery, D., (2000), *Privatization, Restructuring, and Regulation of Network Utilities*, Cambridge, MA: MIT Press, p 370.
[319] Uniform Network Code is available at: www.gasgovernance.com/Code/UniformNetworkCode/
[320] Stern, J., (1997), 'The British Gas market 10 years after privatisation: a model or a warning for the rest of Europe?', *Energy Policy*, Vol. 25, no. 4, pp 387–92.

question remained how. Indeed, as the level of X, into which the cost base feeds, affects shareholders' valuation of assets, there may be no exact methodology.[321] The proposed formula can be summarized as:[322]

$$(2)\ PP = mrV + D + C$$

where Permitted Profits (PP) equal the CCA value (*V*) multiplied by RoI (*r*) and MAR (*m*), plus Depreciation (*D*) and operating costs (*C*). However, *D* is not adjusted for the MAR. Following the 1997 report, this was changed, and also *D* was discounted by *m*. The report also recommended that *V* be rolled forward based on RPI, rather than changes in the CCA value.[323]

This methodology requires an initial *V*, for which the book value at 31 December 1991 was taken. However, BG also included non-regulated businesses, whose valuation is required to determine the regulated business' asset base. Two alternatives are the 'focused' and 'unfocused' approaches. The first applies the MAR only to the regulated business, the second discounts the unregulated part also. The methodologies yielded total permitted revenue values that differed by £140 million, or £7, on average, per customer by the 1997 price reviews. The methodology chosen during this review was the unfocused approach. These problems did not apply to investments made after 1991 which were treated differently and could be fully recovered.[324]

[321] MMC, (1993a), 'British Gas plc: Volume 1 of reports under the Gas Act 1986 on the conveyance and storage of gas and the fixing of tariffs for the supply of gas by British Gas plc'. Available at: www.mmc.gov.uk/rep_pub/reports/1993/fulltext/335c1.pdf

[322] Newbery, D., (2000), *Privatization, Restructuring, and Regulation of Network Utilities*, Cambridge, MA: MIT Press, p 369.

[323] MMC, (1997), 'BG Plc: A report under the Gas Act 1986 on the restrictions of prices for gas transportation and storage services'. Available at: www.mmc.gov.uk/rep_pub/reports/1997/399bg.htm#full

[324] Ofgem, (2001a), 'September 2001 Review of Transco's Price Control From 2002: Final Proposals'. Available at: www.ofgem.gov.uk/Networks/Trans/PriceControls/Transco/Documents1/325-26sep01_pub1.pdf; Ofgem, (2001c), 'February 2001 Review of Transco's price control from 2002: Initial thoughts consultation document'. Available at: www.ofgem.gov.uk/Networks/Trans/PriceControls/Transco/Documents1/322-28feb01.pdf

Following internal unbundling of BG, charges were based on the long run marginal costs (LRMC).[325] Next to the value of the network, this parameter is derived from the estimated capital expenditures and operating costs.

7.4 Cost-reflectivity

A starting point from which the translation of the cost basis into tariffs may be analysed is the 2002–2007 regulatory cycle, as important changes were made for this period. RPI-X had traditionally been employed. However, Ofgem concluded in 2001:[326]

> *'while the RPI-X model of price controls has so far been successful at delivering both improved cost efficiency and a high quality of service from Transco and other price-controlled utilities, there are concerns that in the future cost savings may be made at the expense of quality of service. Therefore it is important that the new price controls provide improved incentives on Transco to deliver an agreed level and quality of service to its customers.'*

Transco performs various functions, including ownership of the national transmission system (NTS TO) and system operator (NTS SO), as well as the corresponding tasks regarding the local distribution zones and metering. Prior to the 2002 cycle, they had been regulated using the same price controls. However, in an attempt to match incentives to required performance better, regulation for each function was separated. The national transmission charge thus consists of two factors: NTS TO and NTS SO. The rationale for this separation is that whereas incentives to invest in capacity were needed, operating efficiency required stricter regulation.[327]

For the NTS TO, baseline long term, firm entry capacity output levels were determined. Transco had to offer at least this capacity for sale through auctions. Investments made above and beyond that required to meet the baseline could result in extra profit, if the price at which

[325] Wright, P., (2006), *Gas Prices in the UK*, Oxford: OUP, p 123.
[326] Ofgem (2001c), 'February 2001 Review of Transco's price control from 2002: Initial thoughts consultation document'. Available at: www.ofgem.gov.uk/Networks/Trans/PriceControls/Transco/Documents1/322-28feb01.pdf
[327] Wright, P. (2006), *Gas Prices in the UK*, Oxford: OUP, p 121.

the capacity was auctioned was high enough. As capacity could be traded secondarily, there was market-based information available to predict shortages. Transco's exposure to the risk of excessive investments was capped. For exit capacity, target cost levels were determined on which the tariff was based. This would allow the TO to exploit more efficient solutions, such as interruptible contracts and storage. The main difference between NTS TO and SO regulation is that the cost driver for the latter is not based on capacity, but is a commodity charge. This means that there is a stronger incentive to cut external costs especially, such as those related to balancing.[328]

The regulatory cycle commencing in 2007 also saw a major change, not in the means of regulation, but in the outcome of the regulatory process. A huge 100 per cent increase in the NTS TO part of the business was permitted.[329] Part of this increase can be explained by rising environmental standards. However, Ofgem's reference to the need to maintain high levels of reliability could alternatively be interpreted to mean that tariffs had been much too low in the past.

7.5 Tariff structures

It was BG itself that developed the entry–exit system through a 1992 consultation document, which was cited in the 1993 MMC reports. Contracts at the time were lengthy and complex and tied to transit between specific points. The charging methodology reflected this and was based on notional paths. This system was opaque, and impeded competition, which was problematic, especially against the backdrop of the desire to develop the NBP spot market. BG considered four viable alternatives:

- The first was to continue the use of a notional path system based on average accounting costs (AAC). However, this had proven problematic.

[328] Ofgem, (2001b), 'September 2001 Transco's National Transmission System Operator Incentives 2002 – 7 Initial Proposals'. Available at: www.ofgem.gov.uk/Networks/Trans/PriceControls/Transco/Documents1/2270-54_transco_incen.pdf

[329] Ofgem, (2006), 'Transmission Price Control Review: Final Proposals'. Available at: www.ofgem.gov.uk/Networks/Trans/PriceControls/TPCR4/ConsultationDecisionsResponses/Documents1/16342-20061201_TPCR%20Final%20Proposals_in_v71%206%20Final.pdf

- The second was an entry–exit system based on AAC. This had the advantage of being relatively easy for shippers to interpret, with the drawback of distorting investment signals.
- The third was the construction of a full matrix based on LRMC: a table specifying the costs of transmission to and from points on the system; which would provide efficiency incentives but would also complicate the regulatory process, as well as leaving it highly sensitive to planning assumptions.
- A fourth option, and the one that BG preferred, was entry–exit charges based on long run marginal costs. This system was thought to be relatively easy to apply and regulate. The use of LRMCs complicated the regulatory process somewhat, in comparison to AACs, however, an advantage was that the system provides the right economic incentives to the TSO. [330]

Against the backdrop of the need for enhanced competition through simplified charging and increased transparency, which was required for the development of the NBP spot market, an entry–exit system based on LRMCs was indeed implemented.

The 1996 Network Code permitted Transco to sell unlimited entry capacity at fixed prices. In 1998, this led to capacity shortages, which resulted in expensive buy-backs. In response to these problems, an auction system for entry capacity was developed. It was employed, starting in 1999, with Monthly System Entry Capacity (MSEC), followed in 2000 by Monthly Interruptible System Entry Capacity (MISEC). By 2003, Long Term System Entry Capacity auctions were also introduced.[331]

In 2002, a distinction between the TO and SO functions of transmission was introduced in the invoicing system, to reflect the regulatory structure. The SO costs are recovered through a distance-unrelated fixed commodity charge to reflect the relevant cost drivers.[332] TO tariffication is based on entry–exit charges, albeit with a separate approach for each. Exit

[330] MMC, (1993c), 'Gas: Volume 2 of reports under the Fair Trading Act 1973 on the supply within Great Britain of gas through pipes to tariff and non-tariff customers, and the supply within Great Britain of the conveyance or storage of gas by public gas suppliers'. Available at: http://www.mmc.gov.uk/rep_pub/reports/1993/337gas.htm#full

[331] Wright, P., (2006), *Gas Prices in the UK*, Oxford: OUP, p 123.

[332] National Grid, (2008), 'The Statement of Gas Transmission Transportation Charges: Effective from 1 April 2008'. Available at: www.nationalgrid.com/NR/rdonlyres/05526F94-4AA1-42F5-ABB1-7CBA1C5E6EB4/27007/StatementofTransportationChargesApr08updatedTable2.pdf

charges are based on LRMCs and set with the aim to generate a 50□50 split of revenues between entry and exit points. Entry capacity however, continues to be auctioned. A correction can be made – even within the year – to exit charges to compensate for low entry charges, if required to generate sufficient revenue.

Firm entry capacity is auctioned for a quarter, month or day. For each entry point, a baseline level of required capacity availability is set, as well as up to 20 tranches of incremental quarterly capacity. For any completely booked tranche, costs would be fully recovered, meaning that a bid is successful if sufficient traders have bidded to book the entire tranche.[333] Then, MSEC is auctioned annually, allocated in descending order of the bids placed. Any remaining capacity is sold on a month-ahead basis as Rolling MSEC. Then both interruptible and firm capacity is offered on a day-ahead basis and allocated through a tender system which is subject to minimum tariffs.[334]

[333]Wright, P., (2006), *Gas Prices in the UK*, Oxford: OUP, pp 124–6.
[334] National Grid, (2008), 'The Statement of Gas Transmission Transportation Charges: Effective from 1 April 2008'. Available at: www.nationalgrid.com/NR/rdonlyres/05526F94-4AA1-42F5-ABB1-7CBA1C5E6EB4/27007/StatementofTransportationChargesApr08updatedTable2.pdf

8 Regulatory Gaps

A comparison of the regulatory systems in two countries, which both have what is generally considered to be relatively advanced regulation in a European context, arrives at the conclusion that different approaches have been utilized regarding the three key questions of transmission tariffication at the national level. For instance, even though in both countries a cost base increase has been, or is about to be, implemented, the underlying reasons are different. In the UK, the cost base increase is to correct for past underpayment of the TSO, whereas in the Netherlands the reason is to stimulate future investment. In the UK, the increase applies to old pipelines, in the Netherlands to yet-to-be-built ones.

Although further analysis may produce suggestions regarding the precise cost to shippers, in practice, the regulatory differences are already problematic for a number of reasons:

The first of these is of a practical nature. Even if no shippers were to be disadvantaged by regulatory differences in a situation in which they make what is, for them, optimal use of the regulatory environment, the cost of regulation has to be taken into account. A shipper who is not used to transactions in a foreign country will have to incur costs in order to become familiar with the system. Especially where empirical knowledge particularly enhances business advantages – such as may be considered the case with auctions – a lack of regulatory understanding forms a barrier to market entry in different European countries.

Related to this (although different), is the problem of regulatory uncertainty. As national governments are allowed much discretion to make their own policy, regulatory uncertainty is enhanced. For instance, if the Jepma effect were indeed to exist, this would be a more significant problem for the German or Dutch regulatory landscape, and the relative attractiveness of each network could thus change. Otherwize, the owner of the Dutch transmission system could make long-term investments based on predicted capacity requirements, on the basis of the difference between regulated prices in the Netherlands and Germany. However, now that it is uncertain whether the cost of transporting gas over the –

geographically much shorter – distance from northern to southern Germany will remain subject to competition from the Dutch system, investments are impeded.

8.1 Article 22 exemptions: BBL

The analysis thus far has only focused on regulatory gaps of the first category: differences in implementation at the national level of European level regulation. However, even if European regulation had fully harmonized the Dutch and UK regulatory system, the granting of exemptions would undermine such efforts, and potentially create gaps between the regulations governing both markets. The two countries' gas markets are connected by the Balgzand–Bacton Line (BBL), which is a submarine interconnector. Under Article 22 of the Second Directive, projects which would not be economically feasible without being exempted from the relevant European regulation may be granted such an exception. The use of this rule is conditional upon the judgement that *inter alia* competition is not negatively affected.[335] Nevertheless, it may be questioned whether exemption from rules designed to enhance competition would then be necessary. The BBL project has indeed been granted an article 22 exemption.

The specific regulation that was required in the absence of applicable European rules took the form of a March 2005 treaty[336] between the countries ('the Treaty'). The core lies in the Second Article which mainly determines that the pipeline is subject to such rules as are given by the government of the country to which the relevant part of the continental shelf belongs. The resulting national regulation is complemented by a voluntary BBL code of conduct[337] and corresponding compliance programme.

The example of the BBL demonstrates that even if European regulation were to harmonize national regulation, the Article 22 exemption may serve to circumvent such regulation *exactly in relation to* cross-border trade. However, as will be analysed below, objective justifications

[335] Art 22, 2003/55/EC.
[336] Governments of the Kingdoms of the Netherlands and the United Kingdom, (2005), *Agreement between the Government of the Kingdom of the Netherlands and the Government of the United Kingdom of Great Britain and Northern Ireland relating to the transmission of natural gas through a pipeline between the Kingdom of the Netherlands and the United Kingdom of Great Britain and Northern Ireland*, The Hague.
[337] BBL Company, 'Code of Conduct '. Available at: www.bblcompany.nl/en/download/Code_of_Conduct.pdf

may exist for the creation of such gaps between regulations, which justifies the separate treatment of this matter.

9 Policy Implications

It is not the purpose of the present paper to suggest that unlimited European level regulation is the way forward. Instead, it is to identify how and why national implementations of European regulation differ – to identify the regulatory gaps. The next question to ask is whether such divergence matters. The answer to this question relies largely on political assumptions about the purpose of regulation. Rather than a comprehensive overview of the various positions, some general comments can be made.

One such set of assumptions was put forward in a report prepared for GTS:[338]

- 'Regulators should set tariffs that allow the regulated business to attract capital for efficient investment.
- The method of fixing tariffs should encourage efficient development and operation of the network by the regulated company.
- Tariff structures should encourage efficient use of the network (including their use by efficient new entrants into gas markets).' (emphasis added)

If it is assumed that by *efficient* is meant *economically efficient*, this means that the gas market is regulated in such a way that neither suppliers nor customers can be made better off without making the other worse off. This means that gas is supplied by the company that is able to do so at the lowest price. It means that the TSO is granted a rate of return that corresponds to the return offered by other assets, namely the risk-free rate corrected for the risk of investment. On the demand side, it means that the gas is purchased by the consumer to whom it is most valuable. A way of achieving such efficiency is through competition. The reason for this is that market inefficiencies provide arbitrage opportunities. The taking advantage of these opportunities is what drives prices back towards the efficient level.

[338] NERA, (2008), 'ERGEG Paper on Tariff Principles: A Comment'. Available at: www.nera.com/image/pub_erge_tariff_principles.pdf

If achieving a market similar to this description is the regulatory objective, the implications are twofold. First, the TSO should be offered a fair rate of return in order to ensure sufficient and efficient investment. Second, this rate of return should be allocated to shippers in such a way that gas is supplied by the company that is capable of doing so most efficiently. This means that each company must face a similar market environment in which, including similar regulation and for this reason, gaps within and between different regulatory jurisdictions may be problematic.

Regulation may drive a wedge between the transmission costs of different companies. This happens explicitly when a tariff is charged for transmission between different geographic regions, such as the German 'T' tariff. More implicit is the cost of entry into a country which has a regulatory system that is unknown and therefore costly for entrants to operate under. The cost-inflating effect of regulatory uncertainty is also important. If there is a positive probability of a regulatory change that will reduce the profitability of an investment, the cost of capital increases. All these are arguments suggesting that an economically efficient market is impeded by regulatory differences. If achieving an efficient market through competition and arbitrage is the objective, and the market is not capable of achieving this without regulation (through, for instance, open seasons), convergence to a unified regulatory system that provides a fair rate of return and enhances competition seems the principal way of achieving this goal.

However, it may be argued that gaps do not harm, and may even benefit consumers, for reasons relating to externalities. Externalities are positive or negative impacts of supply or demand that markets fail to take into account, a classical example being the negative effects of various types of environmental damage. In gas, such an externality may be security of supply. Consumers cannot distinguish between gas supplied in a well-diversified or less secure fashion. Therefore, the price that consumers in an efficient market are willing to pay for security of supply is zero. However, the cost to consumers of a lack of security of supply may be very high. It may therefore be efficient for the regulator to include a security of supply surcharge *above* the tariff that would be the outcome of an efficient market. If European regulation is geared towards achieving an economically efficient outcome, certain projects that enhance the security of supply may need to be treated differently. Following this reasoning, Article 22 exemptions for projects like LNG re-gasification facilities or interconnectors like the BBL could potentially be justified.

In addition to arguing that a theoretical and efficient market would fail to take certain externalities into account, a more practical argument can be made in relation to the current state of regulation. The reality is that the European gas market is not efficient, and regulatory gaps do exist. The added risks, and therefore costs, of this situation may render projects uneconomic that would be economic in an efficient world, particularly with regard to cross-border projects. It may therefore be considered desirable to offer exemptions in order to ensure sufficient investment.

The above is only a cursory review of various policy objectives, and some of their tariff implications, that could be pursued. Further research would be needed to test the validity of the various arguments presented, as well as extending the number of considerations that may be of importance when answering the three regulatory questions.

10 Conclusions and Recommendations

The European regulatory system is the result of an ongoing process. The EU documents demonstrated the difficulty of integrating the various individual Member States' national gas markets. A decade of European regulation has yielded a tariffication principle and structure: cost reflectivity and entry–exit tariffs.

The Commission acknowledged that, nevertheless, regulatory gaps regarding cross-border issues exist. It proposed an *Agency for the Cooperation of Energy Regulators* to resolve these matters. Detailed examination of implementation in the Netherlands and the UK illustrates the tasks that such an agency would face. Although both countries are considered to have very advanced regulation, the tariffication methodologies vary significantly in relation to the three key regulatory questions posed at the beginning of this study:

- *which costs* are *reflected*
- *how are they reflected* in the total revenue requirement
- *how is this revenue requirement allocated to shippers.*

The Dutch regulation shows particularly interesting developments. Citing both gas hub ambitions and the Jepma effect, the Minister of Economic Affairs uses her powers under the Dutch Competition Act to set a target rate of return. Not only has this undermined the independence of the regulator, but it also illustrates how much national politics are permitted, by European regulation, to influence the regulatory process.

In conclusion, the discretion allowed to the national level by EU regulation of the national gas markets has allowed two of the more advanced countries to develop very different regulatory systems. In one of these – the Netherlands – the regulation is to change significantly as a result of the network owner's intervention.

The fact that there are regulatory gaps between countries as well as gaps in national regulatory frameworks does not directly call for any particular policy recommendations.

Some objectives, like security of supply, may justify regulation that does not serve other objectives, such as competition. However, if the objective is for EU regulatory frameworks to converge, in order to ensure the economically efficient operation of the single market, regulatory gaps seem to be a problem. If this objective is indeed central to European gas market regulation, action must be taken to streamline the answers to the three key regulatory questions: *what costs* are *reflected, in what way*, and to which parties are they *allocated*?

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