IMPROVING EUROPEAN GAS INFRASTRUCTURE REGULATION: LESSONS FROM THEORY AND PRACTICE

JEROEN DE JOODE & ALDO SPANJER

ABSTRACT

As an instrument to trigger and speed up new investments in gas infrastructure across the European Union, the European Commission has implemented an exemption regime where new investment projects can apply for an exemption from default third party access regulation and tariff regulation. In this contribution we assess access holiday and transaction cost economics literature and derive conditions for applying an exemption regime. We test whether these conditions are applied in practice by analysing the exemption application process of the Netherlands – UK interconnector (BBL). We conclude that current practice could substantially be improved.

Subject Category:
Infrastructure regulation, EU gas markets

Keywords:
Regulation, Gas infrastructure, Investment

Author Info
*Contact details **J. de Joode** (corresponding author): Jaffalaan 5, 2628 BX Delft, the Netherlands; +31 (0)15 - 278 6956 (phone); +31 (0)15 - 278 3422 (fax); j.dejoode@tudelft.nl (email).*
*Contact details **A. Spanjer:** aldo_spa33@hotmail.com (email).*

1. INTRODUCTION

Prior to liberalization new gas infrastructure investments were generally secured by long-term take-or-pay contracts, vertical integration, cost of service regulation, or government involvement in building and operations. With the inception of liberalization in European gas markets, which came into effect with the enactment of the first Gas Directive (EC, 1998) and was accelerated by a second Gas Directive (EC, 2003), gas transmission companies across the European Union (EU) were supposed to be separated from gas supply companies according to legal or ownership unbundling principles. In consequence, the operation of gas infrastructures became a separated and regulated gas market activity. Regulation of gas transmission infrastructure in the EU is based on the classical 'essential facility' doctrine – which follows from the 'natural monopoly' nature of gas infrastructure – and concerns (i) the obligation for transmission system operators (TSOs) to grant access to third parties on all gas infrastructure, and (ii) tariff or revenue[1] regulation of TSOs. Third party access regulation aims at increasing wholesale gas market competition in the short term by providing new market entrants the opportunity to compete with the former integrated gas supply companies, whereas tariff regulation prevents monopoly pricing.

The introduction of third party access and tariff regulation raised concern whether adequate investment incentives for infrastructure expansion would remain. Third party access provisions reduce the incentive to build new gas infrastructure: after project delivery, the owners must provide access to all third parties, including competitors. In addition, tariff regulation transfers part of the operational efficiency gains to the consumer, which reduces the (future) economic value of new investment.

The second Gas Directive provided a response to the concerns for under-investment in new gas infrastructure assets by creating the possibility for national regulatory authorities and the European Commission (EC) to grant exemptions from third party access and tariff regulation to specific investment projects. Since implementation of the second Gas Directive, a total of twelve gas infrastructure projects – including both pipelines and LNG receiving terminals – have received exemptions from default European regulation. Until January 2009, no exemption application has been rejected.

In terms of the traditional solutions to secure investment highlighted in the first paragraph, we note that the EC is currently focusing on long-term contracts and monopoly regulation to guarantee sufficient investment in gas infrastructures. The instrument of governments building and operating gas infrastructures can be associated with the pre-liberalization market structure. The current market structure is characterized to a significant degree by vertical integration inherited from the period before liberalization. Vertical integration is an impediment to competition and market development. Consequently, in order to arrive at a liberalized and competitive gas market, it should be removed by means of unbundling.

This paper analyzes European gas infrastructure regulation, more specifically the existing regime regarding exemptions. The question is whether the adopted exemption instrument is effective and efficient in stimulating new gas infrastructure

[1] In the remainder we will speak of tariff regulation.

investment. This scope inherently implies that we refrain from analyzing the options of vertical integration and public ownership and operation as a way to facilitate infrastructure investments. The largest difficulty for regulatory authorities in designing and applying an exemptions regime is to strike a balance between stimulating new infrastructure investment (which would improve internal market competition and security of supply) on the one hand, and not excessively hindering efficient markets and infrastructure operations and investment at the expense of the final consumers (affordability) on the other. In this contribution we look at this issue from both a theoretical and a practical perspective. We confront the existing exemption provisions in European legislation with relevant economic theory, and we assess a case study investment project that successfully applied for an exemption from default EU regulation.

In section 2 we discuss the specifics of current exemption regulation. We describe the relevant provisions and conditions currently implemented across the EU, as well as possible modifications in light of the currently pending third Gas Directive. Then we discuss the relevant economic theories on infrastructure investment, including the traditional neoclassical approach, the regulatory access holiday literature and the transaction cost literature, in section 3. From that discussion we derive specific conditions that must hold in order to successfully implement exemption regulation. In section 4 we turn to a case study analysis of the exemption in-strument. We analyze the exemption application process of the Balgzand-Bacton Line (BBL) project and test whether practice does justice to the required conditions for a regulatory exemption derived from literature. Finally, section 5 draws conclusions and lists a number of recommendations for policymakers.

2. EXEMPTION REGULATION IN THE EU

Article 22 of the Gas Directive states that major new gas infrastructures may be exempted from the provisions of Articles 18, 19, 20 and 25 ((2), (3), (4)) of the Directive if certain conditions are met. An exemption can be obtained from third party access, access to storage, access to upstream pipeline networks, and the degree of regulatory oversight (regarding terms and conditions, including tariffs). An exemption can be awarded with regard to all these provisions or a subset. It is consequently possible to obtain an exemption from third party access but not from tariff regulation provisions, and vice versa. In addition to major new infrastructures, exemptions may be awarded to significant capacity expansion of existing gas infrastructure or to modifications to existing infrastructure that enable new supply of gas. Article 22 exemptions not necessarily apply to the full capacity of new infrastructure investment; both full and partial exemptions may be awarded. Moreover, the exemption period may vary from case to case and over total project capacity. In order to obtain an exemption, an application must be filed with the national regulatory authority(ies) in the relevant jurisdiction(s). After the national regulatory authority(ies) has (have) decided upon the eligibility and scope of an exemption, the decision must be brought forward to and assessed by the European Commission. The leading principle for regulatory authorities when handling exemption applications is the proportionality principle: the scope of the exemption must be in proportion to the costs, benefits and risk involved for the consumers

and operator of the infrastructure. Consequently, a major new infrastructure project with large investment risk should be rewarded a more generous exemption than a major new infrastructure with relatively little investment risk. This room for discretion regarding the type of exemption enables regulatory authorities to balance the need for additional investment incentives against the additional cost to the gas market of granting an exemption (in terms of higher transmission tariffs or reduced competition for transmission capacity compared to default third party access regulation).

A major gas infrastructure investment project qualifies for an exemption if the following conditions are met (EC, 2003):

1. The investment must enhance competition in gas supply and security of supply;
2. The level of risk attached to the investment is such that the investment would not take place unless an exemption was granted;
3. The infrastructure must be owned by a natural or legal person which is separate at least in terms of its legal form from the system operators in whose systems that infrastructure will be built;
4. Charges are levied on users of that infrastructure;
5. The exemption is not detrimental to competition or the effective functioning of the internal gas market, or the efficient functioning of the regulated system to which the infrastructure is connected.

In 2004 the EU's Directorate-General for Energy and Transport (DG TREN) published a note (DG TREN, 2004) on the exemption provisions that interprets the legal text in order to clarify existing exemption regulation. For example, the note specifies that a new infrastructure project can be considered major if total project costs would cause a significant increase in the bill of connected customers. An arbitrary level of €10 per year per connected customer impacted by the new infrastructure investment is mentioned as a threshold. In addition, the note underlines that existing exemption provisions do not rule out the implementation of specific infrastructure investment incentives by national regulatory authorities, as long as directives and regulations are complied with. Examples of such targeted incentives are higher rates of return on investment than normally allowed under the default regulatory regime and long-term commitments of the regulator to specific tariff structures or methodologies. Finally, the note reiterates that an Article 22 exemption is an exception to the default rules and that each case is separately assessed.

Regarding Article 22 regulation, the proposed third Gas Directive contains one significant modification. Rather than the Com-mission, a newly proposed Agency for the Cooperation of Energy Regulators (ACER, see EC, 2007) will assess the final exemption decision in cases where new major gas infrastructure projects impact the jurisdiction of more than one national regulatory authority.

Until January 2009, twelve exemptions have been granted (see section 4.1). The European Regulators Group for Electricity and Gas (ERGEG, 2007) observes diverging practices regarding the granting of exemptions. Dif-ferences pertain to, among others, the applied definition of market power, the conditions attached to exemption, and the role of short-term contracts. Conse-quently, the awarded exemptions so far show a diverse picture regarding ex-emption duration, type of exemption, and the share of exempted capacity. The Commission has acknowledged that varying practices could lead to diverging regulatory frameworks across member

states. Therefore, in order to streamline exemption decisions and procedures, the Commission has requested ERGEG to develop guidelines for the application of Article 22 by regulatory authorities. In March 2008, ERGEG published a public consultation paper containing draft guidelines for application of Article 22 (ERGEG, 2008). The consultation resulted in an ERGEG conclusion paper published in April 2009 (ERFEF, 2009).

These initiatives indicate that the European regulators see opportunities for an improved exemptions regime for gas infrastructures. This paper intends to contribute to the development of an improved set of exemption regulation rules and procedures.

3. THEORY ON INVESTMENT INCENTIVES AND EXEMPTION REGULATION[2]

This section discusses different economic perspectives regarding the facilitation of investments in gas infrastructures in a liberalized environment and their implications for regulation. Section 3.1 firstly discusses why exemptions may be required in a liberalized gas market by indicating that the orthodox neoclassical approach provides insufficient incentives to invest in gas infrastructures. In section 3.2 we discuss the theory behind one particular solution to this problem: access holiday literature. In section 3.3 we turn to transaction cost economics literature. From this literature we derive a number of conditions to which an exemptions regime must abide. Section 3.4, finally, provides a synthesis.

3.1 Infrastructure investments and the hold-up problem

Natural gas infrastructures have some very specific characteristics. The main features referred to here are irreversibility of investments (i.e., sunk assets), long lead-times, and high asset-specificity (cf. Hubert, 2007, p. 63). A gas pipeline has very limited, if any, alternative use after it has been constructed. This creates a quasi-rent, which is the difference between an investment's pay-off in its current use and in its highest alternative use. In addition, the decision to build a pipeline is usually based on negotiations between a specific consumer and a specific producer. Furthermore, infrastructure investments are highly capital intensive and are characterized by long lifetimes. These latter two aspects imply that both parties are locked into a long-term bilateral dependency which changes through time and which impacts the appropriation of the quasi-rent. Prior to the investment, the principal – the producer/investor – has a relatively strong bargaining position, as the agent – the consumer or the regulatory authority – depends on him for undertaking the investment.[3] Ex-post, however, the limited alternative use of his sunk investment ties the investor to the market for the foreseeable future, shifting the bargaining power to the regulatory authority. This provides him with the incentives to adapt his policy in order to increase his own or society's rents at the expense of the investor's

[2] This section is partly based on Spanjer, 2008a.

[3] We refer to investor and regulator throughout this paper. The investor may for example be a private company, a state-owned company or the investment may be undertaken in joint ownership. However, this distinction is not important for our purpose, which is to point out that investment-impeding tensions may arise due to differences in incentives between regulators and investors in general.

through appropriating the quasi-rent. The investment hold-up problem arises if these threats induce the investor to postpone or even cancel his investment.

The introduction provided four traditional solutions to hold-up of long-lasting, specific investments: i) long-term take-or-pay contracts, ii) vertical integration, iii) regulating the pipeline as a monopoly, or iv) to have the government build and operate pipelines (Makholm, 2007, p. 4). The neoclassical prescription to introduce competitive forces to induce efficient investments may aggravate the hold-up problem, because it puts pressure on the viability of each of these solutions. Hence, there is a fundamental tension between the short-term focus emanating from the neoclassical view and the long-term focus that is required to facilitate investments (cf. Newbery, 1999). The EU exemptions regime has been developed as a complement to the competitive approach in order to tackle this problem. The next three sections briefly discuss two theoretical perspectives for the application of an exemption regime and derive six specific conditions that must hold.

3.2 Access holiday literature

Access holiday literature is part of regulation theory and is based on the assumption that access regulation truncates profits, which impedes investments (Gans and Williams, 1999; Gans and King, 2003, 2004; Caillaud and Tirole, 2004). Access holiday literature submits that a lack of regulatory credibility to leave access regulation unaltered ex-post negatively impacts sunk investments. In such a situation, an exemption during a definite period of time – an access holiday – removes the hazard of ex-post regulation, which improves project profitability. In the absence of such a firm commitment, the reduced profitability caused by the imposition of access regulation can lead to a delay or even indefinite postponement of an investment project (i.e., the hold-up problem).[4] Appropriate access charges – access charges set at a level that fully compensates for ex-ante risk – may remove truncation. However, following Gans and King (2003), such regulatory commitment is unlikely in practice due to legal, political, and practical constraints. This lack of regulatory commitment powers creates scope to introduce access holidays, which remove truncation by allowing an investor to be completely free from any access regulation for a specified, definite, period of time. The profits retained during the access holiday should compensate the investor for the loss of profits incurred after expiration of the holiday when default access regulation prevails.

The literature identifies two main purposes for an access holiday. Firstly, the profits generated under an access holiday increase overall profitability which may render a previously unprofitable but socially desirable investment project profitable. Secondly, an access holiday can align a private investor's timing of investment with the socially optimal timing of investment. Access holiday models distinguish between two situations here: one where a single private investor undertakes an investment and one with multiple potential private investors. A single private investor creates an externality by taking an investment decision based on the private benefits of his investment without taking into account the social benefits (like increased supply security or a better functioning market).

[4] It should be noted that access holiday literature is not concerned with the efficiency of a particular investment project, either from a private or public perspective.

Hence, when considering to wait or not to make an investment, the investor reaps the full benefits of waiting (i.e., reduced investment costs) but will not face the full social costs of waiting (e.g., reduced surplus for market entrants). Consequently, a private investor will typically delay investment for too long from a societal perspective. In this setting, an access holiday speeds up investment by allowing the investor to reap a larger share of its investment's social surplus. With multiple potential (private) investors, on the other hand, an 'investment race' can cause investments to be undertaken too soon rather than too late from a societal perspective. In this case, the acceleration of an investment by an access holiday is socially wasteful (Reinganum, 1989). We derive two specific conditions from access holiday literature:

1. Exemptions should not be awarded if multiple investors compete for the undertaking of a specific investment;
2. Exemptions should make a previously unprofitable but socially desirable project profitable.

Although access holiday literature provides useful guidance, it is nevertheless inappropriate to base an exemption regime on this literature's recommendations alone, because (i) it overestimates the impact of access regulation on investment incentives, and (ii) it inadequately treats investment timing incentives.

Regarding the first critique, recall that access holiday literature assumes that regulated third party access truncates profits because a regulator cannot credibly promise ex-ante to leave access regulation unaltered ex-post. This assumption renders an exemption from third party access is very useful because it increases profitability by removing the ex-post hazard of regulation for a specified period of time. Spanjer (2008a, p. 48) argues that this argument has limited applicability in practice. Any project can show that regulated third party access diminishes its profitability compared to a situation without it, which makes it impossible to deny an exemption. In fact, the issue regarding investments is not so much whether project profitability diminishes due to access regulation, but rather whether it diminishes such that the project becomes unprofitable. After all, as long as a project's profitability remains positive under regulated access, the investment will commence and there is no need for an exemption. Due to this overestimation of the negative effect of regulated access on project profitability, exemptions are granted more often than necessary. This may explain why it is currently very hard for regulatory authorities to deny an exemption, despite the clear intention to grant them restrictively. Therefore, an additional condition is that:

3. Exemptions should only be awarded if regulated third party access would prevent a socially desirable project from being realized.

A second problem resides in the treatment of investment timing. According to access holiday literature an investor determines investment timing based on the length of the holiday (exemption). However, rather than arising as a consequence of regulatory truncation, investment timing can also be a deliberate strategy of an investor to lower uncertainty. This is reason to turn to transaction cost economics theory since it provides a more thorough analysis of investments and uncertainty.

Finally, two important differences between exemptions that are advocated by access holiday literature and those that we observe in Europe must be recognized. While an access holiday is one-dimensional in the sense that there is no access regulation at all during the 'holiday season', the EU exemption regime is multi-

dimensional in that it distinguishes between different regulatory provisions: an investment can be exempted from third party access, from tariff regulation, or both. In addition, access holiday literature assumes that operators of exempted infrastructures are able to act as a monopolist as long as the exemption lasts. In Europe, however, exempted infrastructures are still subjected to competition policy: anti-competitive behaviour, once proven, is penalized.

3.3 Transaction cost economics theory

Transaction cost economics provides a different, broader perspective to the same underlying problem – potential hold-up of specific, long-term infrastructure investments. Transaction cost economics is concerned with the allocation of economic activity across alternative modes of governance. In contrast to neoclassical economics, which argues that market exchange will eventually set the most desirable equilibrium, transaction cost economics submits that except for the simplest transactions, all transactions are prone to various ex-post contractual hazards associated with exchange (Klein, 2000, p. 466). According to Klein (ibid., p. 467), the hold-up problem is the best-known example of an ex-post contractual hazard.

If an investor undertakes a specific investment in gas infrastructure, he is tied to the trading relation he has invested in. Ex-post hazards arise if circumstances change. According to transaction cost economics, these contractual hazards are determined by three specific characteristics of the transaction: (i) asset specificity, (ii) contractual incompleteness, and (iii) opportunistic behaviour (cf. Williamson, 1975; 1985; 1996). Asset specificity has been explained above. Contractual incompleteness arises because of ex-post uncertainty. Because the future is uncertain, no provision covering all future contingencies can be specified in a contract. Consequently, contracts are necessarily incomplete. In the case of gas infrastructure investments, opportunism relates to opportunistic behaviour of a regulator towards an investor.[5] This is determined by the credibility of regulation and the associated regulatory uncertainty or risk. Ex-post hazards only arise if all three characteristics appear simultaneously (Newbery, 1999). If not, then market exchange or ex-ante contracting solves all problems, and consequently no exemptions are required (Spanjer, 2008b, p. 129).

If these hazards do arise, then without any safeguards, an opportunistic regulator may change the regulatory conditions in order to capture the quasi-rent associated with the specific investment, which lowers the investor's ex-post profits. Anticipating opportunistic behaviour from the regulator beforehand, the investor may delay investment or refrain from it permanently unless the regulator manages to credibly commit ex-ante not to behave opportunistically ex-post. Hence, the essence is to install safeguards that improve the ex-post credibility of the trading relationship. In order to choose the best safeguard, transaction cost economics advocates a comparative institutional analysis in which the governance structure which entails the lowest transaction costs – comprising the direct contracting costs and the costs related to ex-post contractual hazards – is chosen from a set of

[5] Note that an investor may also act opportunistically towards the regulator or a shipper. This paper is concerned with investment distortions, and therefore emphasizes opportunism towards investors.

feasible alternatives. Exemptions must consequently be seen as one such safeguard (as should for example the long-term contracts and vertical integration indicated in section 3.1).

Hence, the key for any regulatory policy aiming to facilitate investments is to find an appropriate commitment device. From the transaction cost economics perspective, therefore, exemptions must be seen as an alternative commitment device in order to install safeguards that mitigate ex-post contractual hazards and consequently improve the ex-post credibility of a trading relationship following an infrastructure investment.

In conclusion, transaction cost economics provides three specific conditions for the design of exemption regulation:

4. Exemptions should serve as risk mitigation measures;
5. Exemptions should be granted only if ex-post hazards are present;
6. An exemption should be the least cost option to mitigate ex-post hazards.

3.4 Synthesis

From the insights of access holiday and transaction cost economics literature we derived a number of conditions that must hold when an exemption regime is applied. We can combine the identified conditions to a limited number of relevant questions that consecutively need to be addressed by the authorities appointed to deal with exemption applications. These would be:

A. Are ex-post hazards present?
B. Do the ex-post hazards warrant mitigation?
C. Is the exemption instrument the least-cost option to mitigate the ex-post hazards?

Below we briefly elaborate on these three questions and relate them to the identified conditions.

The first question reflects the condition stating that an exemption should only be granted when ex post hazards are present (condition #5). If there are no ex-post hazards present the final regulatory decision should be that no risk mitigation is warranted.

If the answer to the first question is affirmative, we should ask the question whether the existence of ex post hazards warrants risk mitigation. Here there are three relevant conditions: exemptions should not be awarded if multiple investors compete for the undertaking of the specific investment (condition #1), exemptions should only be awarded if regulated access would prevent a socially desirable project from being realized (condition #3), and exemptions should make a previously unprofitable but socially desirable project profitable (condition #2). The 'investment race condition' for example applies to LNG developments (Spanjer, 2007). This implies that any assessment of an exemption application must be accompanied by an analysis of regulated access' effect on project profitability; only when profitability becomes negative, will an exemption be necessary. This also requires a rigorous cost-benefit analysis in order to: (i) determine whether imposition of regulated access will result in negative economic value added for the investor, and (ii) assess whether the investment is socially desirable. If not all of these conditions are met, no risk mitigation measure (for example an exemption) should be taken.

The last question relates to the final condition stating that an exemption should be the least cost option for mitigation of ex-post hazards (condition #6). For example, might the risk be better mitigated with a higher return on capital? This question will not be assessed in the remainder of this paper, as we examine whether the application of specifically the exemption instrument can be improved. We consequently refrain from a comparative analysis of different options to mitigate ex-post hazards.

An exemption should be awarded only when all the questions are answered affirmative. If this is the case, a fourth question related to the proportionality of the exemption with regard to the associated risk should be answered.

D. What type of exemption is considered proportional to the ex-post hazards?

4. CASE STUDY ANALYSIS: THE NETHERLANDS – UK INTERCONNECTOR (BBL)

4.1 Introduction

Table 1 Exempted Gas Infrastructure Projects until January 2009[6]

Project	Year of exemption by national regulator	EC Status
North Adriatic LNG terminal (Italy)	2004	Accepted
Isle of Grain LNG terminal (UK)	2004	Accepted
South Hook LNG terminal (UK)	2004	Accepted
Dragon LNG terminal (UK)	2005	Accepted
Balgzand – Bacton pipeline (Netherlands–uK)	2005	Accepted
Brindisi LNG terminal (Italy)	2005	Accepted
Gate LNG terminal Rotterdam (Netherlands)	2006	Accepted
Poseidon pipeline (Greece – Italy)	2007	Amendments demanded
Grain LNG terminal (UK)	2007	Notification of receipt
Liongas LNG terminal Rotterdam (Netherlands)	2007	Accepted
Eemshaven LNG terminal (Netherlands)	2007	Accepted
Nabucco pipeline (Austrian part) (Austria)	2007	Amendments demanded
OPAL pipeline (Germany)	2009	Accepted

In order to assess whether the existing exemption regime properly incorporates the identified conditions, we need a view on how exemption regulation is being applied in practice. To this end, this section discusses a case study of an infrastructure project that has received an exemption.

[6]National regulators have approved all these exemptions. The European Commission eventually decides on the scope and eligibility. For an up-to-date overview of exempted gas infrastructure projects we refer to the Commission's website: http://ec.europa.eu/energy/ infrastructure/infrastructure/gas/gas_exemptions_en.htm.

We have chosen a pipeline investment project, the interconnector between the Netherlands and the United Kingdom (UK) called the Balgzand-Bacton Line (BBL). This choice is motivated as follows. First, four out of six priority projects identified in the Commission's Trans-European Energy Networks (TEN-E) programme concern pipelines.[7] Hence, the TEN-E programme emphasizes pipelines, which is why this paper chooses a pipeline project rather than an LNG project. Second, as indicated in Table 1, out of the three pipeline projects that until now have received an exemption from a national regulator under Article 22, only the BBL has actually been constructed. As long as a pipeline is not actually completed, important project parameters may still change. This uncertainty hampers the analysis of the exemption process. The BBL project is the only exempted pipeline project that has actually been constructed and is fully operational.

After a brief project description the focus shifts to the regulators' assessment of BBL's exemption application. Reiterating the main issue addressed in this paper, we specifically look at whether regulatory authorities have indeed, either implicitly or explicitly, addressed questions A, B and D. The analysis here is entirely based on publicly available sources.

4.2 Project description

The BBL is a 235-kilometer connection between Balgzand on the Dutch North Sea coast and Bacton in the UK that started operations in December 2008. Bacton is also the landing point of the Interconnector with Belgium and an offshore pipeline bringing in gas from small fields in the UK North Sea. The line has a capacity of 15 billion m^3 (bcm) per year. The main project driver is the expected demand growth for new gas supplies to the UK. More specifically, the pipeline is mainly used to deliver gas produced by Dutch GasTerra to British gas supplier Centrica under a 10-year contract for a total of 80 bcm.[8] The pipeline is owned by a joint-venture, BBL Company BV, of which the shares where originally held by three separate subsidiaries of NV Nederlandse Gasunie (60%), Fluxys NV (20%), and E.On Ruhrgas AG (20%).[9] Gasunie is the owner and operator of the complete Dutch gas transmission network and part of the German gas transmission network. Fluxys is the owner and operator of the Belgian gas transmission network as well as the operator of the LNG terminal at Zeebrugge and the Zeebrugge hub. E.On Ruhrgas is one of the leading energy companies in Europe with activities on both the gas and electricity market.

4.3 The BBL exemption process

The exemption application in the case of BBL has been different from standard procedure since the investment decision for this project was planned before

[7] See DGTREN (2007) for a comprehensive overview and evaluation of the priority projects.

[8] GasTerra is currently the leading Dutch gas producer and was part of the former Dutch incumbent Gasunie. Required ownership unbundling of network and supply activities has led to the creation of gas producer GasTerra and national gas transmission owner and operator Gasunie.

[9] In 2007, Russian Gazprom acquired an option to buy a 9% share in BBL from Gasunie (in exchange for a 9% share of Gasunie in Nord Stream AG – the company building a new gas supply line from Russia to Germany across the Baltic Sea). Through an open season procedure for capacity allocation, BBL's capacity has been long-term contracted (10 to 15 years) to GasTerra, E.On Ruhrgas AG and Wingas AG.

adoption of the second Gas Directive and its implementation in Dutch and UK legislation. A two-tier process of first informal and then formal applications with all relevant regulatory authorities developed. These authorities involved the British Department of Trade and Industry (DTI),[10] the Office of Gas and Electricity Markets (OFGEM), the Dutch Ministry of Economic Affairs and the Dutch Office of Energy Regulation (DTe)[11]. After the draft application by Gas Transport Services (GTS, 2003), OFGEM and DTe provided informal comfort regarding the eligibility of an exemption in 2003 (OFGEM, 2003; DTe, 2003). This informal comfort made possible the formal BBL investment decision in May 2004, after which a formal exemption request was filed in December 2004 (BBL Company, 2004). Formal approval was provided in 2005 by both national regulatory authorities (DTe, 2005; OFGEM, 2005) and the Commission (EC, 2005). An integral part of the application process was a consultation period where stakeholders were allowed to express their views on to the exemption application of BBL.

4.4 Ex-post hazards in the BBL project

For the question whether ex post hazards are present in the case of BBL we need to relate to condition #5 that was derived from transaction cost economics in section 3.3. There we indicated that an exemption should be considered as an instrument to mitigate ex-post hazards, for which the relevant criteria are asset specificity, contractual incompleteness, and opportunism. The first two criteria are acknowledged in the general risk condition underlying the exemptions regime (see section two), albeit implicitly. The BBL exemption criteria implicitly incorporate asset specificity because one reason for the exemption has been that BBL is a specific investment based on a long-term supply agreement between GasTerra and Centrica. There is also an implicit reference to contractual incompleteness in the exemption process. As indicated in section 3.3, ex-post uncertainty creates incomplete contracts. Ex-post uncertainty has been an important consideration at several stages of the exemption process. First, GTS notes in its draft application that there will still be risks regarding the sale of transport capacity after the initial contracts have expired. Second, competing infrastructure projects (like the Interconnector pipeline that existed when BBL was built) have played a large role in the BBL project right from the start. This recognition of ex-post uncertainties implies an implicit recognition of incomplete contracts.

That leaves regulatory uncertainty or opportunism. According to GTS' draft application, regulatory uncertainty is a main justification for an exemption. GTS argues that regulatory policy may be influenced by political pressure. GTS furthermore argues that any insecurity concerning the initial long-term contracts might increase investment risk such that the investment will not materialize. Examples of such uncertainty given by GTS were that tariffs could be revised, extra conditions imposed or contract length shortened. These examples point towards regulatory opportunism. BBL Company makes this point explicitly in its formal application. It specifically argues that 'even if a favourable regulatory regime were

[10] DTI was disbanded when the Department for Business Enterprise and Regulatory Reform was created on 28 June 2007.

[11] The Dutch Office of Energy Regulation (DTe) has been renamed recently. While still part of the National Regulatory Authority, it is now known as the Energy Chamber. Here we continue using the former name.

offered at the outset (…) there is no certainty that this would last'. This was an argument for BBL Company to stress that a positive aspect of including exemptions in the second Gas Directive is that it makes ex-post reneging of a regulator more difficult than a regulation that can more easily be amended ex-post. However, none of the regulators make any reference to the possibility (and costs) of regulatory opportunism. The Commission mentioned in its final assessment (EC, 2005, p. 4) that 'since exemptions from third party access are an exception from the general rules in the Directive, these should not go beyond what is necessary for the project to proceed, which in this case, was related to the time periods of the underlying contracts'. Consequently, no reference is made to costs due to regulatory opportunism (nor did DTe and OFGEM refer to it) – not even implicitly. Hence, regulatory opportunism is not acknowledged in the final BBL exemption decision. Hence, the costs of regulatory opportunism appear not to be included in the regulators' risk assessments of BBL (for instance in their cost of capital calculations).

4.5 Does the BBL project warrant risk mitigation?

In answering the second question whether the ex post hazards warrant risk mitigation we need to relate to three earlier mentioned conditions: exemptions should not be awarded if multiple investors compete for the undertaking of the specific investment (condition #1), exemptions should only be awarded if regulated third party access would prevent a socially desirable project from being realized (condition #3), and exemptions should make a previously unprofitable but socially desirable project profitable (condition #2). We deal with these conditions consecutively.

4.5.1 Did multiple investors compete for the undertaking of this investment project?

The investment race condition does not apply to the BBL case. There was no race for investment, and if any, the real investment race concerned the first linkage between the UK and continental Europe (which was won by Interconnector UK by building the pipeline between Zeebrugge and Bacton) according to which the BBL is in fact a 'follower' and not a 'first-mover'. The fact that such an investment race did not occur, supports the view that there was no competition between multiple investors to undertake this specific investment project. Hence, the answer to this question must be no.

4.5.2. Does third party access regulation make the BBL project privately unprofitable?

Interconnector UK (2003), the aforementioned operator of the Interconnector between Zeebrugge and Bacton, provides a response to the draft application that addresses the issue when an exemption should be granted. Interconnector UK argues that as an exemption seeks to make an uneconomic investment project economic, it is similar to a direct financial subsidy. This hampers the principle of a level playing field. Furthermore, Interconnector UK notes that since third party access rules are always an obstacle to an investment, all parties should be granted an exemption. This latter observation extends to our earlier comments on the relation between regulated third party access and project profitability.

GTS' and BBL Company's arguments are to a large extent contingent on the assumption that the risks related to a regulated third party access regime justify an

exemption. Recall from section 3.2 that an exemption is warranted only if regulated access results in losses to an investment project. Awarding an exemption therefore implies that BBL would become unprofitable if regulated access applies. However, nowhere in the exemption process has this assumption been scrutinized. A proper analysis would have assessed whether the negative repercussions of regulated access for project profitability are such that the project becomes unprofitable overall.

4.5.3. Is the BBL project socially desirable?

An answer to this question can be given by a *social* cost benefit analysis. The social value of the project is accounted for in the procedure in the Article 22 exemption criteria. Criterion 1 states that the exempted investment must enhance competition in gas supply and enhance security of supply. Gas market competition and security of supply are typical aspects that are not taken into account in private investment decision-making. The impact of an investment on a market's security of supply position is typically an external effect. The regulatory authorities have assessed BBL's impact on competition and security of supply for the UK and the Netherlands separately, not for the region of North-Western Europe or the EU as a whole. From studying the documents on the BBL exemption application procedure we may conclude that no social cost benefit analysis has been performed.

Relevant for this case of the BBL is the fact that a pipeline connection between the Netherlands and the UK has received the label 'priority project' in the Commission's Trans-European Energy Networks (TEN-E) programme (DG TREN 2007). Priority projects are projects with common European interest. In the Commission's definition a common interest project must have economic viability, where economic viability is "assessed by means of a cost-benefit analysis in terms of the environment, the security of supply and territorial cohesion" (EC, 2006). To our knowledge, the selection of these priority projects has not been based on a comprehensive quantitative analysis of social costs and benefits. Although one could infer that referencing to this particular TEN-E status of the BBL project would be sufficient in highlighting the social desirability of the project, this in our view is not valid due to the absence of a proper cost-benefit analysis at a European level.

4.6 The proportionality principle and the scope of exemption

As argued above, the BBL exemption application has insufficiently included the lessons from economic literature. However, we have not argued that BBL has received an unnecessary exemption, because a clear analysis on the social desirability of the project is missing. If such an analysis would confirm the social desirability of the privately unprofitable project, the proportionality principle needs to be applied. In applying this principle, regulatory authorities have basically two variables at their disposal: the duration of the exemption and the amount of exempted capacity during the exempted period.

In the exemption application BBL refers to the specific length of the long-term contracts that resulted from the open season procedure. BBL argues that any degree of insecurity concerning its initial long-term contracts – if for example tariffs would be revised, extra conditions imposed or contract length shortened – may increase investment risk such that the investment will not materialize. An additional GTS argument is that the initial long-term contracts with shippers, which range 10-15

years, are necessary but not sufficient for mitigating the risks. There will still be risks concerning the sale of transport capacity after the initial contracts have expired. BBL therefore applies for an exemption covering the full length of the longest initial contracts, i.e., 15 years. The application also included any spare capacity over and above the initial contracts. OFGEM (2005) agrees with this view and is willing to grant a 15-year exemption for the long-term contracted initial capacity. DTe (2005) argues that a 10-year exemption is sufficient, because the BBL investment project in fact received project go-ahead despite the Commission's reaction to OFGEM's informal comfort letter. In this letter only a 10-year exemption was allowed. DTe nevertheless decided to formally grant the full-length, 15-year, exemption for the entire capacity of the initial contracts, which is similar to OFGEM's stance. DTe provided three reasons: (i) it considered it too difficult to determine the exemption length for which the investment would cease to be attractive, (ii) there was no real need to shorten the exemption because the competition from alternative projects could partly mitigate the risk of BBL abusing a dominant position, and (iii) BBL's open season procedure, which allows the market to express interest in participating in the project beforehand, and which can be considered as a form of third party access, justified leniency.

The Commission received the UK and Dutch decisions on 12 April 2005. Its final assessment (EC, 2005) proposes a number of amendments to the exemption decisions, one of which concerns exemption length. The Commission considers that exemption length should not extend beyond what is needed for the project to go ahead. As indicated above, the project commenced after having received comfort from the Commission for a 10-year exemption. Furthermore, in contrast to the national regulators, the Commission considers the presence of competing pipelines or an open season procedure an insufficient justification for a longer exemption. According to the Commission, adopting a more lenient stance towards the project – that is, allowing longer exemptions than strictly necessary for the project to commence – based on such arguments runs counter to the essence of the Gas Directive which is to restrictively grant exemptions. Put differently, taking the presence of competition as an argument to less forcefully introduce competition (through a longer exemption) runs counter to the Commission's goal of introducing competition as much as possible. In sum, the Commission is considerably stricter regarding BBL's exemption conditions than the Dutch and UK regulators. It considers that BBL meets the Article 22 criteria only if the exemption decision by the UK and Dutch regulators is amended such that its length is 10 years (2006-2016) for the initial contracts and 15 years (2007-2022) for the remaining capacity.

Much less attention seems to have been paid to the second exemption variable: the amount of capacity to receive an exemption. DTe at one point did request a business case calculation for an alternative project design including 25 percent of spare BBL capacity destined for short-term capacity sales. BBL argued that the access tariffs would become uncompetitive if GTS had to reserve 25 percent of BBL's capacity for short-term access (hence if only 75 percent of capacity is exempted). From then onwards, no further discussion on the viability of alternative project designs took place.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Access holiday and transaction cost literature provide useful guidance for designing an exemption regime. From these literatures we derived six specific conditions and operationalized these conditions for the public policy domain. For every project applying for an exemption, regulatory authorities entrusted with exemption decision-making powers need to answer the following questions:

A. Are ex-post hazards present?
B. Do the ex-post hazards warrant mitigation?
C. Is the exemption instrument the least-cost option to mitigate the ex-post hazards?

An exemption should only be awarded if all the questions are answered affirmatively. If this is the case, a fourth question related to the proportionality of the exemption with regard to the associated risk should be answered:

D. What type of exemption regime is considered proportional to the ex-post hazards?

We have answered three of the four identified questions for a real investment project for which an exemption was applied and granted: the BBL project. After analyzing the BBL application in the spirit of the identified questions we have found that practice has done insufficient justice to underlying theory. Current practice as demonstrated by the BBL project has failed to incorporate the lessons provided by access holiday and transaction cost economics literature.

Firstly, in the BBL case the exemption instrument was considered an adaptation of default regulation aimed at improving project profitability rather than as a device to mitigate various types of regulatory risks (i.e. ex post hazards). Especially regulatory uncertainty and opportunism have not been adequately addressed. There was no room for the risk of regulatory opportunism to justify leniency regarding the granting of BBL's exemption.

Secondly, the BBL application process did not investigate the assumption that regulated third party access makes the BBL project privately unprofitable. Moreover, a sound analysis on the social desirability of the project was not included in the application process.

Thirdly, the proportionality principle seems to have been applied insufficiently. One indication of this is that relatively little attention has been paid to alternative project specifications (e.g. with respect to the amount of capacity contracted long-term and the amount of free capacity). In addition, the final exemption decision with regard to the length of the exemption period in the end proved to be an issue where the EC applied exemption regulation as strict as possible.

5.2 Recommendations

We recommend the regulatory authorities entrusted with exemption decision-making to apply the basic exemption questions provided in this paper. Ideally, these questions would be implemented in guidelines for applying exemption regulation

(Article 22). However, one of the proposed questions in this paper was not tested in the case study analysis of BBL and needs to be tested separately. This concerns the proposed question related to the assessment of whether an exemption is the least cost risk mitigation option. In addition, we acknowledge that in answering the identified questions regulatory authorities must have at their disposal the proper assessment tools and sufficient information. With regard to the economic assessments of the impact of regulated third party access on project profitability and the social desirability of a project, sound and transparent cost-benefit frameworks must be available. In this sense, full implementation of the recommended exemption questions needs to be complemented by the development of adequate economic tools. An important element in this development is new insight that needs to be gathered from additional research on the effects of regulatory risk and regulatory opportunism on investment profitability.

Finally, the analysis in this paper contributes to improved decision-making on exemption applications and does not provide a quantitative assessment of the desirability of the outcome of the exemption process, for example in the case of the BBL. Such an ex post cost-benefit analysis on the BBL exemption could answer questions like: (i) was the exemption necessary for investment? And (ii) to what extent did the exemption result in higher project profitability? This remains an issue for future research.

ACKNOWLEDGEMENTS

The authors thank Laurens de Vries en Machiel Mulder for their comments on an earlier version of this paper. In addition, we like to thank participants of the 8th doctoral seminar on natural gas market research (Delft University of Technology, October 24th 2008) for their useful comments and suggestions. Full responsibility for any remaining errors lies with the authors.

Financial support from the Next Generation Infrastructures foundation is gratefully acknowledged (www.NGInfra.nl).

REFERENCES

BBL Company (2004), "Application document for an exemption from regulated third party access for the BBL pipeline project", 15 October.

Caillaud. B., and J. Tirole (2004), "Essential Facility Financing and Market Structure", *Journal of Public Economics,* 88(3-4), p. 667-694.

De Joode, J. (2006), "Gas Interconnector Regulation – The trade-off between competition and security of supply: The case of the Netherlands-UK interconnector", Paper prepared for the 29th International Conference of the International Association for Energy Economics, 24-27 September, Ann Arbor, Michigan.

DGTREN (2004), "Exemptions from Certain Provisions of the Third Party Access Regime, Note of DG Energy and Transport on Directives 2003/54-55 and Regulation 122/03 in the electricity and gas internal market", Brussels.

DGTREN (2007), "Implementation of TEN-E projects" (2004-2006). Evaluation and Analysis, Brussels.

DTe (Dienst Toezicht Energie) (2003), "Ontwerpaanvraag Gastransport Services (GtS) voor een ontheffing voor de Balgzand Bacton Leiding (BBL), Advies Dte", (openbare versie), 25 november.

DTe (2005), "Aanvraag BBL Company voor een ontheffing voor de Balgzand Bacton Leiding (BBL), Advies Dte" (openbare versie), 25 maart.

EC (1998), "Directive 98/30/EC of the European Parliament and of the Council of 22 June 1998 concerning common rules for the internal market in natural gas", OJ L 204, 1-12.

EC (2003), "Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive" 98/30/EC, OJ L 176, 57-78.

EC (2005), "Commission's amendment decision regarding BBL", 12 July, Brussels.

EC (2006), "Decision No 1364/2006/EC of the European Parliament and of the Council of 6 September 2006 laying down guidelines for trans-European energy networks and repealing Decision 96/391/EC and Decision No 1229/2003/EC".

EC (2007), "Proposal for a Regulation of the European Parliament and of the Council: Establishing an Agency for the Cooperation of Energy Regulators, COM(2007) 530 final", Brussels.

ERGEG (2007), "Treatment of New Infrastructure: European Regulators' Experience with Art. 22 exemptions of Directive 2003/55/EC: Interim results of ERGEG survey", ERGEG paper E07-TNI-01-04.

ERGEG (2008), "Draft Guidelines on Article 22: An ERGEG Public Consultation Paper", Ref: E07-GFG- 31- 07.

ERGEG (2009), "Guidelines on Article 22: An ERGEG conclusion paper", Ref: E07-GFG-31-07b

Gans, J.S., and S.P. King (2003), "Access Holidays for Network Infrastructure Investment", Agenda, 10(2), p. 163-178.

Gans, J.S., and S.P. King (2004), "Access Holidays and the Timing of Infrastructure Investment", *Economic Record*, 80(1), p. 89-100.

Gans, J.S., and P.L. Williams (1999), "Access Regulation and the Timing of Infrastructure Investment", *Economic Record*, 75(2), p. 127-137.

GTS (Gas Transport Services) (2003), "Draft application for an exemption for the Balgzand Bacton Pipeline project (BBL)", September.

Hubert, F. (2007), "Strategic investment in strategic international gas transport systems", EIB Papers, 12(2), p. 63-81.

Interconnector UK (2003), "RE: Balgzand-Bacton gas interconnector (BBL) consultation", 16 October.

Klein, P.G. (2000), 'New Institutional Economics', in B. Bouckaert, and G. De Geest, (eds.), *Encyclopedia of Law and Economics*. The History and Methodology of Law and Economics, Volume I, Cheltenham: Edward Elgar, p. 456-489.

Makholm, J.D. (2007), "Seeking Competition and Supply Security in Natural Gas: The US Experience and European Challenge", Paper prepared for 1st CESSA Conference, Berlin University of Technology, 31 May, Berlin, Germany.

Newbery, D.M. (1999), *Privatisation, Restructuring and Regulation of Network Industries*, Cambridge, Massachusetts: MIT Press.

OFGEM (2003), "Gas Transport Services Draft application for an exemption for the Balgzand Bacton Pipeline project" (BBL), *Final views*, December.

OFGEM (2005), "Application by BBL Company for an interconnector license to participate in the operation of the Balgzand Bacton line", *OFGEM final views*, April.

Reinganum, J.F. (1989), "The Timing of Innovation: Research, Development, and Diffusion", In: Schmalensee, R. and R. Willig (eds.), *Handbook of Industrial Organization*, Volume 1, Amsterdam: Elsevier, p. 849-909.

Spanjer, A.R. (2007a), "TPA exemptions and the hold-up problem on European gas markets", Paper prepared for the 30th International Conference of the International Association for Energy Economics, 18-21 February, Wellington, New Zealand.

Spanjer, A.R. (2008a), "Do Article 22 exemptions adequately stimulate investments in European gas markets?", *Zeitschrift für Energiewirtschaft*, 32(1), March, p. 46-51.

Spanjer, A.R. (2008b), "Structural and regulatory reform of the European natural gas market - Does the current approach secure the public service obligations?", Dissertation, Leiden University.

Williamson, O.E. (1975), *Markets and Hierarchies: Analysis and Antitrust Implications*, New York: Free Press.

Williamson, O.E. (1985), *The Economic Institutions of Capitalism*, New York: Free Press.

Williamson, O.E. (1996), *The Mechanisms of Governance*, New York: Oxford University Press.