Effective unbundling of energy transmission networks: lessons from the Energy Sector Inquiry (1)

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Introduction

During the late 1990s, the European Union decided to fundamentally change the basis for the provision of electricity and gas from a monopolistic to a competitive market framework. This objective was introduced via the first electricity and gas Directives (2), which removed the legal monopolies and partially opened the market to competition by allowing large users to choose their suppliers. Already at that early stage, the Community legislator identified the risk that vertically integrated incumbents could use their monopolies over the transmission networks in order to stifle the emergence of competition in the supply business. Rules were established to mitigate that risk, including the introduction of a Third Party Access regime and some unbundling provisions to ensure that vertically integrated operators would not discriminate against new entrants or create other entry barriers.

This commitment to competition was confirmed and strengthened with the adoption of the second package of Directives in 2003 (3). With this legislation Member States agreed a timetable to open electricity and gas markets fully to competition. The unbundling provisions were reinforced, a *regulated* Third Party Access regime was introduced and the creation of national regulators became mandatory. In addition, Regulations (4) were introduced which allowed for the adoption of legally binding guidelines with the aim of facilitating cross border competition.

However, after several years of experience with this new paradigm for energy markets, the Commission has become increasingly aware of the presence of significant remaining obstacles to competition. Because of these obstacles, consumers are not reaping the full benefits of the liberalisation process. Accordingly, in mid-2005, the Commission launched the Sector Inquiry into the European gas and electricity sectors pursuant to Article 17 of Regulation 1/2003 (5).

In January 2007 the Commission adopted and published the Final Report on the Sector Inquiry (6). One of the main shortcomings identified in the Final Report relates to continued vertical foreclosure, i.e. the obstacles to competition stemming from the vertical integration of companies active in the supply and network business. The Final Report concluded that there is an ongoing conflict of interest in these vertically integrated companies with a continued risk that they use their control over the network to make market entry and expansion of their competitors in the supply markets difficult. Whilst the Directives have already sought to address these issues by introducing a minimum level of unbundling, the Sector Inquiry has demonstrated that the current unbundling regime is inadequate.

(1) The content of this article does not necessarily reflect the official position of the European Communities. Responsibility for the information and views expressed lies entirely with the authors.

(2) Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 concerning common rules for the internal market in electricity. (OJ L 27, 30.1.1997, p. 20–29).
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, 21.7.1998, p. 1–12).

(3) Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC. (OJ L 176, 15.7.2003, p. 37–56).
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, 15.7.2003, p. 57–78) (Hereafter — the Electricity and Gas Directives).

(4) Regulation (EC) No 1228/2003 of the European Parliament and of the Council of 26 June 2003 on conditions for access to the network for cross-border exchanges in electricity. (OJ L 176, 15.7.2003, p. 1–10).
Regulation (EC) No 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission network. (OJ L 289, 3.11.2005, p. 1–13).

(5) Commission decision (EC) No C(2005) 1682 of 13 June 2005 initiating an inquiry into the gas and electricity sectors pursuant to Article 17 of Council Regulation (EC) No 1/2003.

(6) Communication from the Commission (COM(2006) 851 final): "Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors (Final Report)" and its Technical Annex SEC(2006) 1724. (Hereinafter — the Final report).

More than anything, at a time when very large investments are needed to promote market integration and ensure security of supply, the way the current unbundling is set up, leads to worrying distortions of investment incentives. In many Member States it is currently left to the vertically integrated incumbents to invest in the additional transmission capacity that could bring more competition to their own supply business: such a setting is unlikely to yield socially optimal investment decisions. There is little doubt that a co-ordinated European response is required.

The endeavour to establish a genuine European internal market for electricity and gas is ongoing. The Energy Council of 15 February 2007 emphasised that there should be effective separation of supply and production activities ensuring equal and open access to transport infrastructures and independence of decisions on investment in infrastructure. The European Council of 8-9 March 2007 approved to a large extent the conclusions of the Energy Council as regards the internal energy market, thus maintaining the mandate that the Commission had been given by the Energy Council of 15 February to proceed with an additional unbundling agenda. The European Council based its conclusions *inter alia* on the Commission's Final Report following the Sector Inquiry thus following the Commission's position. In particular, the Council agreed on the need for a number of new developments of the internal market rules including effective separation of supply and production activities from network operations (unbundling), guaranteeing equal and open access and independence of decisions on investment in infrastructure with relevant investment signals contributing to the efficient and more secure operation of the transmission grid. Furthermore, the European Council invited the Commission to elaborate measures to this effect and to come forward with relevant proposals including through the development of existing legislation where possible.

DG Transport and Energy has already initiated an impact assessment procedure to identify the most suitable methods for implementing unbundling that effectively addresses the inherent conflicts of interest resulting from the integration of network and supply interests. A further Communication including detailed formal proposals to the Council and the European Parliament will be produced, based on guidance from Council and Parliament.

The present article discusses the findings of the Sector Inquiry that are most relevant to the issue of unbundling, how they demonstrate that the current unbundling regime is ineffective, and point to the need for a structural solution. It is structured as follows: first, a short description of the current unbundling regime is provided. Then the deficiencies of the regime are identified and illustrated (7). It is also explained why ownership unbundling stands out, in the light of these findings, as the most effective solution. It then turns to legal considerations related to the introduction of ownership unbundling; and concludes that Europe should reflect carefully whether it can afford to introduce a sub-optimal unbundling regime.

Current unbundling regime

It has been clear since the beginning of the liberalisation process that a significant degree of unbundling is needed in order to ensure non-discriminatory access to the networks and to avoid conflicts of interest within vertically integrated energy companies.

The current Electricity and Gas Directives impose minimum obligations on energy network operators with regard to *legal and functional unbundling* between transmission/distribution networks on the one hand and upstream (generation or production)/downstream (supply) functions on the other (8). The companies concerned are obliged to create separate legal entities for network activities. There must also be separation of executive management and decision-making with respect to operation, maintenance and development of the network. The day-to-day management of the network operator and all related decisions must be made independently and without interference by the parent company. Legal unbundling also presupposes the creation of separate accounts.

Furthermore, Transmission Systems Operators ('TSOs') are obliged to treat all system users alike, including as regards access to information (principle of transparency and non-discrimination). In order to ensure that this obligation is respected, the Directives require "information unbundling" through the creation of information barriers between supply and network activities ("Chinese Walls"). Network operators must act independently and must not be influenced by the vertically integrated group.

The unbundled network operators also have to actively implement a compliance programme serving as a formal framework for preventing discriminatory behaviour and protecting confidentiality of business information. In order to facili-

(7) The article focuses in particular on transmission and distribution activities. However, the problems caused by the insufficient unbundling also exist on e.g. gas storage markets which are not covered by this article.

(8) Unbundling requirements for gas and electricity companies are essentially the same.

tate their supervision, network operators have to submit annual reports on the implementation of the compliance programmes to the regulatory authority.

Legal and functional unbundling for transmission networks is required from July 2004, as is functional unbundling for distribution networks ([9]).

Deficiencies of current unbundling regime

The Sector Inquiry as well as the analysis carried out by DG Transport and Energy in preparation of the Strategic Energy Review confirmed that significant differences persist in the level of the implementation of the unbundling provisions. In a number of Member States, the unbundling provisions are still missing due to the lack of timely, complete or correct transposition of the Directives into national law ([10]). In practice this means that different degrees of market opening exist between Member States undermining the creation of a level playing field.

However, even where Member States have adopted the unbundling provisions required under the Electricity and Gas Directives, this does not mean that network operators necessarily comply with them. Furthermore, even where the unbundling provisions are fully implemented, the Sector Inquiry has demonstrated that incentives for preferential treatment within vertically integrated operators remain.

It also appears that national regulators cannot verify to a satisfactory degree whether unbundling provisions are respected in practice. Various reasons can be named for this, such as lack of resources and appropriate powers.

Fundamentally, the current unbundling regime does not suppress the inherent conflict of interest that stems from vertical integration of network and generation and/or supply interest. The incumbent suppliers view their networks as strategic assets that serve their commercial interests.

Even when there is a more sincere attempt to abide by the letter and spirit of the current unbundling rules, the network company is often unclear of its objective and role. It cannot combine diverging targets, i.e. non-discriminatory third party access and compliance with unbundling regime versus optimisation of the return to the vertically integrated company. This leads to a high risk that the companies concerned will engage in anti-competitive strategies or, more generally, to sub-optimal behaviour as a network operator.

Indeed, the current unbundling rules do not remove the incentives and possibilities for ***discrimination with respect to third party access.*** Often, changes to network access conditions have, like investment projects, to be approved by the TSO's parent company where supply affiliates are represented. Network operators that have supply interests usually have both the ability and incentives to offer preferential treatment to that supply business and this leads to discrimination of their competitors. There are various means through which such discrimination may take place, some of which are difficult to detect and/or expeditiously remedy and sanction, even for a specialized regulatory body: delaying or complicating the connection of new entrants' power plants to networks, maintaining artificially small balancing zones, charging high balancing fees, which will be primarily paid by new entrants, not making available unused capacities or not using the most efficient allocation methods: e.g. implicit auctions.

- One of the German gas incumbents was recently able to offer a gas delivery contract for a new power plant requiring a substantial import capacity, to be shipped through the network of its "associated" network company. At the same time new entrants were not granted firm capacity on an almost identical pipelines path, although the capacities they requested were substantially lower than the ones granted to the power plant. Under the current provisions, such discrimination is difficult to detect ([11]).

([9]) Member States are permitted to postpone legal unbundling of all distribution networks until 1 July 2007. They are also authorised to relieve integrated gas and electricity distributors supplying less that 100,000 customers, or small isolated networks, from the legal unbundling requirements.
There is a possibility of exemptions from the requirement of legal and functional unbundling for Distribution System Operators until July 2007 foreseen in the Electricity and Gas Directives.

([10]) As a consequence, the Commission has initiated infringements proceedings in April 2006 by sending letters of formal notice to Austria, the Czech Republic, France, Ireland, Italy, Poland, Slovakia and Spain. In these Member States, legal and/or functional unbundling is not yet complete. In addition, five Member States benefit from derogations under the provisions of the Second Gas Directive or do not have a functioning gas market. Reasoned opinions, the second step in the infringement procedure, were sent in December 2006, cf. press release IP/06/1768.

([11]) Cf. Final Report, Technical Annex SEC(2006) 1724, para 168.

- The Commission gathered indications during its Sector Inquiry that one transmission system operator grants its affiliated supply company substantive rebates for the transportation fees as compared to non-affiliated network users. In doing so, the network operator directly supports the competitive position of the related supply company. This appears to be an overall business strategy carried out by some integrated gas companies and leads to excessive access tariffs, which raise competitors' costs (12).
- The nomination procedure of gas transport capacities appears to be different vis-à-vis different shippers. While the supply company of vertically integrated operators can nominate their capacities directly to the network's dispatching centre, third parties with short term interruptible contracts still have to nominate their capacities in advance to the network operator who aggregates them before sending to the dispatching centre for execution (13).
- Various shippers allege that the access to transit capacities is in some cases made conditional upon the prior existence of gas purchase or supply contracts, so that planning ahead becomes difficult for smaller independent shippers. In addition, gas incumbents do not offer new entrants wheeling services, enabling them to redirect gas flows of purchased capacities once put into the pipeline system (14).

More generally, ***information leakage*** between the supply and network affiliates of legally unbundled, but still vertically integrated, network operators tends to be a common practice (15). Despite information barriers, i. e. "Chinese walls" being in place under the legal unbundling regime, information that facilitates discrimination is, in some cases, systematically shared between the network operator and company's competitive activities. This undermines the trust of alternative producers and suppliers in the functioning of the market.

- In the Sector Inquiry, the TSOs were asked to provide information about their practical implementation of the unbundling requirements. Where this has not yet been fully completed, the process is allegedly under way. The TSO's replies however point to a certain number of admitted shortcomings as regards the current level of unbundling. For example, top management of the supply branch, which are represented at the parent level, often have access to strategic business information of the transport company, either directly or as a result of their representation in the Supervisory or Administrative Board of the latter. The same holds true for both transmission and distribution system operators where insights into the activities of competitors are made available to affiliate supply businesses (16).
- The network operator is informed about the envisaged change of supplier, as this supplier has to access the network in order to supply the customer. Information provided in the Sector Inquiry shows that network operators may find a way to inform the management of the vertically integrated supply branch when a customer is considering switching supplier. As a result, customers are prevented from switching suppliers; market entry for competitors becomes difficult.
- Network companies provide more detailed information on, for example, load, outages, generation from wind turbines, to their affiliate supply company so that they can better optimise their trading and production portfolio.

(12) Cf. Final Report, Technical Annex SEC(2006) 1724, para 155.
The fact that tariffs have historically been too high has also been confirmed by the decision of regulators to reduce the tariffs submitted for approval by transmission system operators.

(13) Cf. Final Report, Technical Annex SEC(2006) 1724, para 165.

(14) Cf. Final Report, Technical Annex SEC(2006) 1724, para 170.

(15) Newbery, David (2005). Refining Market Design. Paper presented at the Conference "Implementing the Internal Market of Electricity: Proposals and Time-Tables". Brussels. Page 20: "Vertically integrated transmission and generation companies can exploit informational advantages, discriminate in the provision of access, balancing and other ancillary services, and cross-subsidise competitive activities by inflating monopoly costs." http://www.sessa.eu.com/documents/final/SESSA_report_wp3.pdf

(16) Cf. Final Report, Technical Annex SEC(2006) 1724, para 153.

Most importantly, with the current state of unbundling ***investment incentives remain distorted.*** The degree of autonomy over investment decisions to be taken by the legally and functionally unbundled network operators tends to be too low vis-à-vis their parent companies, so that investment decisions in new infrastructure projects are in practice taken by the group as a whole ([17]). As such, investment decisions of vertically integrated undertakings are very often biased towards the needs of supply affiliates ([18]). Since the vertically integrated incumbents normally have very strong market positions as a supplier in the area where they control the network, it is often in their interest *not* to invest in infrastructure that would bring additional competition to this area: the interest in protecting the market power and the profitability of their supply business trumps their interest in increasing their (regulated) network business. The few examples in the box below are illustrative of this phenomenon.

- ENI, the Italian gas incumbent, has delayed investments, which would increase the capacity in a pipeline owned by one of ENI's subsidiaries, the Trans Tunisian Pipeline Company. The increased capacity would have improved the ability for competitors to import Algerian gas to Italy and to compete with ENI on the Italian gas wholesale market. The discontinuation of the pipeline expansion was driven by ENI's supply interest in Italy (alleged fear of a "gas bubble"). ENI solved the conflict of interest between its network business and supply activities to the detriment of its own network business and of its competitors on the gas supply market. The Italian competition authority imposed a fine on ENI and ordered ENI to desist from its anti-competitive conduct ([19]).
- Indications of discriminatory behaviour have been found with regard to investment decisions taken by the integrated gas companies. Certain investment decisions on network extensions of the transport company have to be approved by an investment committee of the parent company of the TSO. In a number of cases, companies have only invested in capacity expansions if their related supply arms had previously confirmed their interest for the bulk of the extra capacity. By contrast, the investment did not take place if the interest in extra capacity merely stemmed from competitors ([20]).
- While the auctioning of scarce electricity interconnector capacity has generated large congestion rents ([21]), there has been limited investment in such new capacity. For instance, in the period 2001 to 2005 three German transmission system operators, which are all part of vertically integrated companies, generated congestion revenues of Euro 400-500 million. Of these revenues only Euro 20-30 million were used to reinforce/build new interconnectors. No regulatory approval took place on how these companies used the congestion rents as no regulator was in place.

In addition, the fact that the incumbent suppliers own the transmission network has a chilling effect on the investment of other companies (third parties). New entrants will hesitate to invest if they are not convinced that the network operator will treat them fairly. For instance, it is not attractive for new entrants to invest in a power plant or new gas import infrastructure if there is a risk that requests for connection to the network are met with unreasonable requirements for unreasonable payments to remove the alleged congestion supposedly caused by the newly connected plant.

The three above-described limits of the current unbundling regime (discrimination, information leakage and distorted investment incentives) are reinforced by the current governance of network operators vertically integrated with a

([17]) Under the existing Electricity and Gas Directives, certain coordination mechanisms are still allowed to ensure supervision rights of the parent companies regarding the return on assets. For instance, the parent companies are able to approve the financial plan and to set global limits to the indebtedness of its subsidiary.

([18]) See the national sections on network operator and unbundling in the Commission Staff Working Document, Implementation report on electricity and gas EU regulatory framework: country reviews — SEC(2006) 1709; and the Final Report, Technical Annex SEC(2006) 1724, especially from para 157 (gas) and 487 (electricity).

([19]) See ENI-Trans Tunisian Pipeline Decision of 15/02/2006 of the Autorità Garante della Concorrenza e del Mercato, published in the Bollettino of the AGCM no. 5/2006 (reference: A358). See also Decision of 29/11/2006 of the Tribunale Amministrativo Regionale (TAR) del Lazio, on appeal no. 3582/2006 by ENI Spa against the decision of 15/02/2006 in the ENI-Trans Tunisian Pipeline case. To date only the operative part of the judgement has been published. It appears that the decision of the competition authority was upheld, but the fine was lowered.

([20]) Cf. Final Report, Technical Annex SEC(2006) 1724, para 157.

([21]) Article 6 (6) of the Regulation 1228/2003 states that revenues resulting from the allocations of congested interconnector capacity shall be used for inter alia network investments maintaining or increasing interconnector capacities. Cf. Final Report, Technical Annex SEC (2006) 1724, para 541.

supply activity, which exacerbates the conflict of interest between supply and network business. A governance issue that mere regulatory oversight is insufficient to address in a satisfactory manner (for lack of monitoring, lack of powers, lack of resources, and a lack of cooperation between regional operators).

- A number of supply and transport companies within vertically integrated company share physical assets such as office buildings and IT systems. Employees working for the supply and for the transport company still work in the same premises and meet each other on regular basis. All these seemingly small factors contribute to continuous regular contacts between employees of both companies. The persisting links facilitate a coordinated approach between the supply branch and transport branch ([22]).
- The need to take into account the interests of the vertically integrated supply branch is reinforced by the fact that managers in the TSO might have career perspectives in the holding or the supply branch. Also the head of the network company often participates in strategic discussions, business review meetings and training sessions organised within the parent company.
- Complete regulatory oversight/control is very difficult to achieve. Particularly in Member States with a high number of transmission and distribution companies it is virtually impossible for the regulator to verify in all companies that the unbundling provisions are fully respected. Generally the regulator will simply not have the resources to ensure that unbundling requirements are complied with.
- Moreover, national regulatory authorities are unable to monitor cross-border related unbundling due to their competences being restricted to national activities ([23]). There is a regulatory cross-border gap, which cannot be remedied by application of competition rules alone.

The experience and evidence collected by the Commission, as indicated above, confirms that the mere implementation of existing unbundling legislation is not sufficient and does not address the malfunctioning of the energy markets. More needs to be done.

In its Final Report for the Energy Sector Inquiry the Commission reached the conclusion that ownership unbundling would be the most effective cure to the above-described problems.

Ownership unbundling as an optimal solution

What is ownership unbundling?

Ownership unbundling can be defined as a separation of the previously common ownership structure between network and supply activities of a company (supply within this meaning includes retail supply as well as production/generation). In other words, it is separation of all network functions from the other activities — also with respect to the ownership of the assets.

Ownership unbundling implies the creation of a separate company, which owns and operates network assets and the removal of any significant shareholding by one type of company in the other. In practice it means that no supply company could have a significant stake in the network operator and certainly not a stake that would give a company any type of control — individually or jointly with others — over the other ([24]). Whilst there is considerable scope to reflect about options how to best implement ownership unbundling, it should be clear from the outset that companies which are actual or potential suppliers in a given Member State could not acquire/maintain networks in this Member State. This also applies to companies located outside the EU.

The ownership unbundled network operator would manage system operation (i.e. the interface with the system users), network maintenance and network investment in a coordinated manner. The main advantage of such a system would be that the conflicts of interest inherent in the current unbundling regime would no longer exist. Whilst regulatory oversight would still be required the network operator could focus on efficient provision of network service and optimised investments.

It is important to underline that ownership unbundling would not oblige Member States to privatise the supply and/or network business. Where both

([22]) The Sector Inquiry has revealed that the "special relationship" leads to a (systematic) copying of emails to the other formally unbundled, but affiliated branch (lack of "information unbundling"), whilst obviously third parties do not get access to such information at the same time.

([23]) Where the related supply company is incumbent in the neighbouring market there is a conflict of interests when improvement of the third party access regime on a pipeline system necessary to supply the incumbent's home market is required.

([24]) Energy companies active in upstream and downstream markets would be prevented from owning shares in the network company above a certain threshold.

network and supply activities are currently in public hands, it would be possible to retain the public ownership, provided that sufficient structural separation is achieved (e.g. the separated businesses are run by two different ministries, or one business is run by municipalities and the other by the State).

Even though ownership unbundling is not required by the current unbundling regime, a significant number of companies have already successfully undergone the ownership unbundling process. This is the case for electricity transmission system operators in Member States like the United Kingdom (in England and Wales), the Netherlands, Portugal, Slovenia and Spain, but also in the Czech Republic, Denmark (for the main TSO), Finland, Lithuania, Romania, Slovakia and Sweden ([25]). In the gas sector, ownership unbundling at the transmission system operators' level has taken place in Denmark, Great Britain, Portugal, Romania, Spain and the Netherlands ([26]).

What are the advantages?

The benefits of ownership unbundling of transmission from production seem to be widely acknowledged ([27]). There is increasing evidence that the implementation of ownership unbundling would be welfare enhancing ([28]). Ownership unbundling would clearly generate benefits for *competitors* on the one hand, and for the *network companies* on the other hand. It is ultimately to the advantage of the energy sector as a whole and possibly even to the *shareholders* of the vertically integrated incumbents. Whilst it is not the miracle solution removing all obstacles to a successful completion of the liberalisation process in one go, it would certainly address the main shortcomings of the current regime by removing a key barrier to entry.

As regards the **competitors,** network operators will have no incentive any more to discriminate between market participants. "Passive" discrimination (inertia) of the incumbent vis-à-vis third parties will also be excluded. As a result, new entrants and existing suppliers will get better access to unused transmission capacity from the network operator seeking to optimise its profits. The competitors' concern that the vertically integrated network operator provides its supply arm with confidential information will be eliminated.

The strategic benefits of full ownership unbundling for **network operators** include the fact that the network operator will be able to focus on optimising its main business — the use of the network. As the network business is regulated, a network operator can only generate more revenues if it

([25]) In the Czech Republic, Denmark (for the main TSO), Finland, Hungary, Ireland, Lithuania, Slovakia and Sweden, the TSO is under state control.

([26]) The choice of these Member States to adopt full ownership unbundling was triggered by various considerations, mainly stemming from the expected strategic benefits. In some cases, separation has been the result of national legislation. In other cases, the undertakings heavily influenced by the regulatory environment and the fact that a bundled organisation structure was failing to meet the expectations of customers or shareholders, have opted for a voluntarily ownership separation (e.g. British Gas).
European Commission (2006). Unbundling of electricity and gas transmission and distribution system operators. Final Report. Gómez-Acebo & Pombo Abogados, S.L. and Charles Russell LLP. http://ec.europa.eu/energy/electricity/publications/doc/2006_03_08_final_common_report.pdf

([27]) For instance, regulators favour full ownership unbundling. The European Group of Regulators for Electricity and Gas (ERGEG) has confirmed that this is its preferred option.
See ERGEG's response to the European Commission's Communication "An Energy Policy for Europe", 6 February 2007. http://www.ergeg.org/portal/page/portal/ERGEG_HOME/ERGEG_DOCS/ERGEG_DOCUMENTS_NEW/Energy%20documents.
Cf Deutsche Bank Research. EU-Monitor 44. Beiträge zur europäischen Integration. Aurer, Josef (2007). EU-Energiepolitik: Höchste Zeit zu handeln! Page 7 ff. http://www.dbresearch.de/PROD/DBR_INTERNET_DE-PROD/PROD0000000000207530.PDF
Cf. Economic survey of Germany 2006: Sustained Competition is absent in Energy Markets. Excerpt of the OECD Economic Survey of Germany, 2006, Chapter 5. Page 7: "(O)wnership separation of transmission from generation is, in principle, preferable. Introducing an independent systems operator while leaving transmission and generation in the ownership of the Verbundunternehmen would entail separation of transmission asset ownership from transmission asset management, which may result in inefficiencies." http://www.oecd.org/dataoecd/24/63/36789821.pdf
Cf. Jamasb, T.J. and Pollitt, M.G (2005). Electricity market reform in the European Union: review of progress towards liberalisation and integration. University of Cambridge. Page 7: "Unbundling can take the form of functional, accounting, legal, or ownership separation, with the last being the most effective."
http://www.electricitypolicy.org.uk/pubs/wp/ep66.pdf

([28]) Cf. Economides, Nicholas. The Economics of networks. International Journal of Industrial Organization. 14 (1996) 673-699. page 694: " For example, if competition between an entrant and the incumbent reduces the market power of the incumbent, entry may increase social welfare even when the entrant produces at higher cost than the incumbent." http://www.stern.nyu.edu/networks/Economides_Economics_of_Networks.pdf
Cf. Van Koten, Silvester, Ortmann Andreas (2006). The unbundling regime for electricity utilities in the EU: A case of legislative and regulatory capture? "There seems wide agreement that the quick implementation of ownership unbundling would be welfare enhancing". (Pittman, Russell (2003). Vertical restructuring (or not) of the infrastructure sectors of transition economies, Journal of Industry, Competition and Trade. 3:1/2, 5-26.).

expands its network. Incentives (e.g. higher return on investments) can be given for new infrastructure so that ownership unbundling will allow investments in the network infrastructure when it is beneficial for the network business and the market in general. In addition, the network operator would avoid a burdensome part of the regulatory oversight and heavy unbundling compliance programmes would become superfluous. The complex, intrusive and resource intensive regulatory approach for network operators (and regulators) will be avoided.

The experience to date is positive, especially regarding the important question of whether ownership unbundling will ensure adequate network investment. As an example, the experience in particularly from the United Kingdom and the Netherlands can be mentioned.

The *United Kingdom* (England and Wales) markets underwent a gradual unbundling process of the gas transmission networks since 1990, which lead to full ownership unbundling ([29]). An analysis of this example confirms that the levels of investment increased significantly after ownership unbundling (see table below). During the same time the UK model has delivered a more than 50% reduction (in real terms) in transmission costs since privatisation due to the internalisation of the system operator/transmission owner interface, innovation, aligned incentives and a reduction of balancing costs. The effective incentivisation led to significant technical innovation in investment and maintenance. The gas transmission system operator has supported the development of significant new LNG and pipeline capacity, which has led to the rapid reverse of the high 2005 price levels ([30]).

*Change of **investment levels** in the ownership unbundled British Gas Group* ([31]):

- *Transco when owned by British Gas Group (upstream integration)* ([32]).

3/1997-3/1998	*£ 147m*
1998-1999	*£ 191m*
1999-2000	*£ 140m*

- *Fully unbundled period* ([33]):

2000-2001	*£ 228m*
2001-2002	*£ 239m*
2002-2003	*£ 182m*
2003-2004	*£ 159m*
2004-2005	*£ 128m*
2005-2006	*£ 360m*

([29]) Before the British gas incumbent was ownership unbundled there had been persistent discrimination in third party access. The United Kingdom regulatory and competition authorities took repeated actions to solve these problems, which successively increased separation of network and supply activities. The costs of complying with onerous and intrusive regulation were one of the factors which led to the choice made by British Gas to separate ownership. The ownership unbundling appeared to the company to be the best way to move supply and trading business outside of the scope of regulatory control and provide the market participants with strategic benefits. The company eventually separated the network company into new independent companies which are able to focus on their core activities leading to optimisation of network activities. It has facilitated cross border activities and network integration.

([30]) Cf. Joskow, P. (2005). Patterns of Transmission Investment, Centre for Energy and Environmental Policy Research, page 31: "The organizational and regulatory arrangements that characterize the system in England and Wales are generally viewed to have been quite successful in supporting competitive wholesale and retail power markets with a transmission system that has attractive operating and investment results. During the period, demand grew, about 25,000 MW of new generating capacity entered the system, and almost an equal amount was retired. Power flows changed significantly on the network. While network investment is cyclical, following cycles of generation additions and retirements, intracontrol area investment post-restructuring has increased significantly compared to intracontrol area investment pre-restructuring (Figure 6), while congestion costs have declined significantly since 1994. Network losses have also declined."
http://econ-www.mit.edu/faculty/download_pdf.php?id=1133
Cf. Newbery, David (2005). Refining Market Design. Paper presented at the Conference "Implementing the Internal Market of Electricity: Proposals and Time-Tables" 2005. Brussels. Page 8: "*The first lesson one can draw from the British experience is that unbundling ownership of transmission from generation has been critical in enabling competition to deliver cost reductions in England and Wales*". http://www.sessa.eu.com/documents/final/SESSA_report_wp3.pdf

([31]) DG Competition calculations made on the basis of Transco, Lattice, NGC annual accounts and price review documents from the Competition Commission, Ofgem incentives review document.

([32]) Cf. Ofgem: Review of Transco's Price Control from 2002. Final Proposals, September 2001, Table 4.8 page 59.

([33]) Source: Lattice and National Grid Annual accounts.

In *the Netherlands*, the gas transmission system operator has been ownership unbundled since 2005 (Gasunie). The unbundled operator, driven by the optimisation of network activities, has started the Gate LNG terminal in Rotterdam; the construction of gas storage project in the Zuidwendig is underway. Gasunie now has a natural business drive to attract additional gas flows, and to accommodate a broad customer base for gas-related infrastructure services through timely investment. One can observe that the average annual 2001-2004 investments were 63 million Euro whereas the average ex post 2005 average annual investments are estimated 127 million Euro ([34]).

For Spain, the boom of LNG terminals (also needing investments in connecting infrastructure) was significantly facilitated by (progressive) unbundling. One can also make the observation that the only countries that have incumbent-supplier independent LNG terminals are the United Kingdom, Spain and the Netherlands (ongoing project), all of which have ownership unbundled companies.

Furthermore, cross border activities will be facilitated. Network operators will cooperate more freely with neighbouring transmission system operators. By contrast, cross-border cooperation between vertically integrated network operators creates a real risk of collusion and is thus problematic from a competition point of view.

This will encourage cross border mergers of network companies ([35]). Cross border investments and EU energy infrastructure capacity will also increase (see the Dutch example).

These various positive developments will in the end benefit shareholders in the vertically integrated energy companies. From a more short-term perspective, the combined value of the two companies will increase given the traditional discount that conglomerates trade at. The management of both the network and the supply arm will be encouraged to concentrate fully on their own business and so to improve their operational efficiency and so their return on capital. This will be reflected in companies share price. Unbundling could also facilitate the development of wider geographical markets, which would allow and encourage mergers in the supply business.

More generally, effective unbundling will allow for a better allocation of capital by allowing for low risk — low return profile of a regulated network business to be clearly separated from the more variable returns associated with the production and supply businesses.

Options other than ownership unbundling, such as reinforced legal unbundling ([36]) have a major shortcoming: they do not address at the root the

([34]) Clearly the arguments for investments can not easily be disentangled from each other: such as facilitate markets, security of supply, etc. See: http://www.nvnederlandsegasunie.nl/media/pdfs/Gasunie-jv2005.NL.pdf and see: http://www.dte.nl/images/102259%20Informele%20zienswijze%20uitbreiding%20H-gas%20transportsysteem_ tcm7-93518.pdf.

([35]) Cf. Mulder Machiel, Shestalova Victoria and Lijesen Mark. Vertical separation of the energy-distribution industry. An assessment of several options for unbundling. CPB Netherlands Bureau for Economic Policy Analysis. Page 28: "The entirely independent status following from full ownership unbundling will further improve the management of networks, as network firms will now no longer be compromising between the interests of the network and other activities. Furthermore, depending on the scenario with respect to regional transmission, full unbundling may facilitate horizontal mergers at the transmission level, which may give rise to economies of scale." http://www.cpb.nl/nl/pub/cpbreeksen/document/84/doc84.pdf
Cf. also Newbery, David (2005). Refining Market Design. Paper presented at the Conference "Implementing the Internal Market of Electricity: Proposals and Time-Tables" 2005. Brussels. Page 20: "Simulations suggest that the cross-border ownership (Electrabel in Belgium and the Netherlands, E.On and RWE spanning the Dutch-German border, in both cases owning transmission and interconnection) makes market integration more problematic. This again highlights the importance of acquisition and mergers that are viewed too narrowly in national terms." http://www.sessa.eu.com/documents/final/SESSA_report_wp3.pdf

([36]) The same applies also for the Independent System Operator model. Due to the different focus of this article, deficiencies of the Independent System Operator model are not addressed here.

fundamental conflict of interest that stems from vertical integration between the supply business and the network business. It is from this conflict of interest that the distortion of investment incentives or the incentives for third party access discrimination derive.

Alleged disadvantages

Concerns have been expressed that ownership unbundling would lead to considerable disadvantages and that there is uncertainty regarding its impact on the welfare of European consumers. Ownership unbundling would thus, it is said, reduce economies of scale, bring possibly large one-off transaction costs, increase the cost of capital of the supply business, or weaken the position of European suppliers in negotiations with external suppliers. This, it is argued, would then lead to less investment, higher prices and endanger security of supply.

As a matter of fact, where full ownership unbundling has been established, there have been, as yet, no such unexpected negative consequences flowing from that change. To the contrary, in such cases, both the network business and the supply businesses have gone on to perform well on an independent basis and under different regulatory regimes and associated risk profiles. The concerns expressed above are thus somewhat theoretical. They are very unlikely to apply in practice.

More specifically, as to the alleged loss of economies of scale or one-off transaction costs, these would not likely be significant when we move from the *current* system to ownership unbundling. Legal and management unbundling (which are already required under the current EU legislation) should have already brought about these supposed negative consequences — and the empirical evidence available suggests that these have been fairly limited. Concerning more specifically the transaction costs of ownership unbundling, the experience of the UK shows that they are small, even for a move from full vertical integration to ownership unbundling of the transmission network: the one-off cost of the British Gas de-merger in 2000 was around 3.2% of the company's yearly turnover.

Similarly, as has been already mentioned, ownership unbundling is actually likely to spur investment in transmission networks. It certainly will also facilitate entry, and thus positively influence investments by other actors than the vertically integrated incumbents. Some suggest however, that vertically integrated incumbents benefit from retaining ownership over the transmission network, in that the stable regulated returns of that activity diminishes their overall cost of capital. This is said to facilitate their investment in the supply business. As a result, it is argued that ownership unbundling would diminish investments by the (previously vertically integrated) incumbents in supply activities. Similarly, there is a concern that ownership unbundling will leave an independent supply business that has much weaker bargaining position vis-à-vis external supplier of energy sources.

In practice, it is very doubtful that this theoretical mechanism would lead to an overall net negative impact on investment, not least because energy suppliers have many other corporate strategies to diminish their overall cost of capital, or increase their bargaining power. The completion of the internal energy market will also open up opportunities for growth of the supply business by merger and acquisition, in particular outside the home countries of the companies in question — spreading the risk over a bigger scale of activity. Moreover, the added value of the vertically integrated companies is not so much their ownership of the network. It is rather their customer base and their knowledge of how to supply these customers efficiently. The advantage is thus rooted in the retail supply expertise. Unbundling the transmission assets will therefore not necessarily weaken the negotiation position of the EU suppliers vis-à-vis the producers.

Another strategy, which has actually been used by the very same companies in the past, is to develop into "multi-utilities", by investing for example in the water sector (which is close in risk profile to the transmission network business). These various types of growth by acquisition, or simply an increase of the gearing level, should allow the companies to hedge their risks.

Legal questions under EC Law

Structural unbundling remedies of various forms have been accepted by the Commission in several key energy merger cases ([37]). The Commission

([37]) The Commission dealt with merger cases like EDP/GDP, E.ON/MOL, and, recently, with GDF/Suez which were approved only after the parties concerned had accepted structural remedies. Each merger case was unique and review by the Commission focused on addressing competition concerns arising from the transaction via appropriate remedies on the affected markets.
Case No. COMP/M.3696 E.ON/MOL. IP/05/1658, 21 December 2005.
Case No. COMP/M.4180 GdF/Suez. Published on 14.12.2006.
http://ec.europa.eu/comm/competition/mergers/cases/decisions/m4180_20061114_20600_fr.pdf
Case No. COMP M. 3868 DONG / ELSAM / ENERGI E2, published on 27.03.2006.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:C2005/233/04:EN:NOT

is also vested with the powers to impose structural remedies in antitrust cases, where there is no equally effective behavioural remedy or where such a behavioural remedy would be more burdensome for the undertaking concerned ([38]). However, in both merger cases and antitrust cases the remedies must accurately address the competition concerns raised on the affected markets. Consequently, competition policy — in its case-based approach — is not an effective method for delivering ownership unbundling across the board. In order to achieve a level playing field throughout the EU, it is therefore necessary to address structural unbundling through legislative and regulatory measures.

Various legal objections have been voiced against introducing ownership unbundling through EU legislation. Such objections include that it would constitute a form of expropriation (falling foul of Article 295 EC or of general principles of EC law) or a limitation of free movement of capital under the EC Treaty.

Firstly, it must be however clarified that in certain Member States, limits in ownership links could, for example, be introduced through licensing rules (i.e. it would not be possible for the same group to hold both a licence for network operation and a licence for supply/production activities). Vertically integrated energy groups would also be able to freely dispose of one or the other activity, at market price, and over a certain period of time.

Secondly, the limitations resulting from ownership unbundling can be lawfully imposed. Article 295 EC ([39]) is generally interpreted to guarantee neutrality as regards the public or private ownership of companies. Consequently, as already explained above, where both network and supply/production activities are currently in public hands, it would be possible to retain the public ownership, provided that sufficient structural separation is achieved (e.g. the separated businesses are independently run by two different ministries, or one business is run by municipalities and the other by the State).

In as far as it could be argued that Article 295 also protects the core rights of ownership, it does not have the effect of exempting the Member States' systems of property ownership from the fundamental rules of the Treaty ([40]). In addition, the right to property is not an absolute right but must be viewed in relation to its social function. Consequently, its exercise may be restricted, provided that those restrictions in fact correspond to objectives of general interest pursued by the Community and do not constitute a disproportionate and intolerable interference, impairing the very substance of the rights guaranteed ([41]). As has been shown above, ownership unbundling is necessary in order to ensure that competition in the internal market is not distorted, and less far-reaching measures are insufficient to achieve this.

A similar necessity and proportionality test would also be applied when assessing the compatibility of ownership unbundling with the general principles of EC law (in particular, the rules on protection of property derived from the European Convention on Human Rights and Fundamental Freedoms). In the same way, any restrictions to the free movement of capital under Article 56 of the EC Treaty can be justified. Furthermore, as regards the subsidiarity test in Article 5 of the EC Treaty, the arguments brought forward for ownership unbundling, and the need to ensure a level playing field across an integrated EU energy market, clearly justify action at EU level.

Conclusions

The need for unbundling of transmission networks in EU energy markets is not a theoretical construct: as evidenced by the information collected in the Sector Inquiry, there are many indications that unbundling is necessary for fully functioning markets. This information is unequivocal: vertical integration of network and supply business creates a situation of conflict of interest resulting, among others, in distorted investment incentives and discriminatory third party access for competitors.

It is also clear from the Sector Inquiry findings that the current unbundling provisions as required by the Second Electricity and Gas Directives are not fully adequate. Even where they are transposed into national law, these directives fail to address this conflict of interest, which is at the root of the competition problems observed. The ineffectiveness of current unbundling requirements is a major reason for the slow pace of market inte-

([38]) See Article 7 and recital 12 of Regulation (EC) No 1/2003.

([39]) "This Treaty shall in no way prejudice the rules in Member States governing the system of property ownership."

([40]) Cf. Case C-302/97 Konle [1999] ECR I-3099, paragraph 38, and Case C-503/99 Commission v Belgium [2002] ECR I-4809, paragraph 44.

([41]) Cf. Case 44/79 Hauer [1979] ECR 3727, paragraph 23; Case 265/87 Schräder [1989] ECR 2237, paragraph 15, Case C-280/93 Germany v Commission [1994] ECR I-4973, paragraph 78; Case T-65/98 Van den Bergh Foods Ltd v Commission, paragraph 170.

gration and the low growth in cross border trade observed in EU electricity and gas markets. Since the Energy Council of 15 February and the European Council of 8-9 March 2007, the Commission has a clear mandate to proceed with a solution for an effective unbundling of the energy transmission networks.

A structural solution, whereby no undertaking would have a significant stake in the network business of a Member State in which it is an actual or potential supplier, would address this fundamental issue. Such ownership unbundling is, in the Commission's view, the best available option ([42]). It is legally feasible, and has been successfully implemented by many Member States. There are no legal obstacles that would prevent the Community from introducing it, and a growing body of evidence that it would bring significant benefits to the completion of the European energy market: more investment into the network, a lower cost for network users, and more competition on the supply side. By contrast, there is a growing recognition that working on improving legal and management unbundling without ownership separation will be a very complicated task — and one that will require a lot of fine-tuning and entail a heavy regulatory burden.

Should we take this time to experiment a "third way" or move forward now in the direction of full ownership unbundling? The case for ownership unbundling is strong from a technical standpoint, and solidly grounded on an extensive empirical basis — amongst others, thanks to the Commission's Energy Sector Inquiry. Ownership unbundling is a cleaner, one-off and less intrusive form of intervention in the market. A "third way" would therefore essentially mean postponing the decision and gathering more experience in the meantime. It would create significant uncertainty as to the future regulatory design of the energy sector — with the prospect of further iterations in adapting the unbundling provisions, against the background of a possible "full ownership unbundling", which in the short run will not disappear from the agenda. While increased experience is always helpful to make a choice, persisting uncertainty has a cost: it depresses investments across the sector. At a time where security of supply is becoming a key concern for our economy, this is a cost that the EU may not be able to afford.

([42]) See Communication from the Commission to the European Council and the European Parliament — An energy policy for Europe SEC(2007) 12.