

# Agenda

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## Energy sector inquiry: a third way for transmission networks?

**The European Commission has concluded its sector inquiry into the workings of the European energy markets, and in the process has set the scene for a battle over the future of the EU's 'bundled' national energy champions. Is the future full unbundling? Can the separation of transmission system operation from ownership be made to work? This article outlines the main findings of the inquiry and explores the key plank in the Commission's reform strategy, namely further structural unbundling**

By July 1st 2007, all energy consumers in the EU are supposed to be given the opportunity to switch electricity and gas suppliers. Together with the creation of a functioning single market for energy, this is meant to herald a new dawn of competitive prices, increased innovation, and improved consumer welfare. Although the Commission's past research has already shown that this deadline is unlikely to be achieved,<sup>1</sup> the major contribution of its sector inquiry is that it gives a number of reasons why.<sup>2</sup> It therefore serves as a foundation on which to build constructive proposals for reform of the sector.

One interesting and important unresolved policy question now facing the Commission is how to construct a package of reforms that balances the need for increasing competition *ex post* for existing infrastructure with the provision of sufficient *ex ante* incentives for new infrastructure investment. These two aims are not easily reconciled. In the first instance, this policy conundrum collapses to a question about the appropriate use of competition powers enforced by DG Competition and regulatory reform implemented by DG Energy and Transport.<sup>3</sup>

For its part, the Commission has suggested that greater structural unbundling is necessary to improve competition, and that simply relying on behavioural remedies and further regulatory reform is not sufficient. It is important to note, however, that this is likely to be achievable only through a combination of enforcement under EU competition law<sup>4</sup> and a further set of electricity and gas Directives. Indeed, the Commission has stated a clear preference for requiring full 'ownership unbundling' of (mainly national) transmission networks for electricity and gas, observing that:

Economic evidence shows that full ownership unbundling is the most effective means to ensure

choice for energy users and encourage investment. This is because separate network companies are not influenced by overlapping supply/generation interests as regards investment decisions.<sup>5</sup>

However, there are at least two questions that follow from this policy stance. Would ownership unbundling necessarily solve the *ex post* competition and *ex ante* incentives problems referred to above? Furthermore, are there any other models that would be equally effective, but easier to implement?

- To the extent that ownership unbundling has the potential to both increase the incentives on companies to maximise utilisation of existing network capacity and undertake new infrastructure investment, it would support the above policy aims. However, as discussed in this article, this is not necessarily the case mainly due to the potential for a diminution of companies' ability to finance and remunerate investment in new infrastructure and innovation.
- A further consideration for the Commission is the widespread support in some Member States for the preservation of 'national champions', occasionally justified by their presumed greater ability to ensure reliable commodity supplies derived from their improved bargaining power relative to international oil and gas companies. The expected political opposition to forced ownership unbundling may therefore make it necessary to pursue the creation of independent system operators (ISO) instead, which would make it possible for vertically integrated firms to own transmission networks without actually operating them. Before analysing the relative economic benefits of vertical integration (broadly, the status quo), ownership unbundling, and the ISO model, the main findings of the sector inquiry are outlined below.

## The Commission's findings

The Commission's report is extensive in the breadth (including both electricity and gas sectors) and depth of its analysis, encompassing wholesale energy markets, transmission networks and associated capacity markets (eg, for storage and system-balancing services), and retail markets. Its findings include the following.

- **Market concentration in wholesale energy markets persists, potentially giving participants market power.** Importantly, the Commission found that the persistence of long-term contracting (especially in the gas sector) has limited the liquidity of the wholesale market. In addition, the current market concentration is largely a feature of the national market definition, something that would be mitigated through the creation of a genuine single market.
- **Competition in downstream energy markets is frequently hampered by contract terms raising customers' cost of switching suppliers.** The predominance of long-term contracts, automatic renewal clauses, and end-use restrictions (for gas) has actively prevented further market entry and consumer choice.
- **The predominance of vertical relationships (eg, through direct ownership or long-term contracts) prevents new entrants from accessing infrastructure.** The joint ownership of transmission networks together with generation and/or retail assets was also associated with a lack of transparency over available network capacity, possibly in an effort by incumbents to prevent new market entry.
- **Competition and market efficiency is currently being thwarted, resulting in prices that are unlikely to reflect market fundamentals.** The lack of access to wholesale energy supplies, network infrastructure, and/or customers is actively preventing market entry, even to the point of making the threat of market entry not credible. A key concern raised by the Commission is that the resulting price signals transmitted from energy markets to the wider EU economy could be making other consumption and investment decisions inefficient. If so, this would negatively impact on EU competitiveness.

## Vertical integration

The Commission's findings highlight the potential for changes to the market structure and regulatory reform to improve competition, perhaps substantially. However, the impact of such reforms would need to be carefully weighed against the potentially adverse consequences for investment.<sup>6</sup> For example, there are a number of circumstances in which the current market structure and contracting arrangements may have facilitated much-

needed investment, despite the current diversity of Member States' regulatory regimes; inconsistent (and sometimes incomplete) application of existing energy Directives; and investors' perceptions of regulatory risk.

To see this, it is worth reviewing the economic relevance of vertical relationships in general, and the presence of fully vertically integrated energy companies in EU energy markets in particular. First, the generic benefits of vertical relationships are well known, and include the ability to benefit from:

- economies of scale and scope—that is, the 'synergy' benefits of either undertaking different (but perhaps related) activities or having greater opportunities for realising size-dependent efficiencies such as those for overhead costs;
- overcoming asymmetries of information, which may otherwise make contracting out for a variety of necessary services prohibitively costly or risky;
- internalising costs and benefits that exist as a result of incomplete, illiquid, or inefficient markets for 'external' benefits (eg, security or reliability of supply);
- mitigating the impact of hold-up and contract renegotiation, particularly as a result of having undertaken investments that are large, 'sunk' (ie, irreversible), and 'specific' (ie, to a particular industrial application, product, customer group, or location).

Second, these generic features of more vertically integrated companies have direct relevance to the energy sector, as follows.

- **Electricity interconnectors.** It remains a possibility that the Commission's desire for greater convergence of energy markets across the EU (to facilitate wholesale competition) could be realised more quickly under a vertically integrated market structure than with independent transmission companies. For example, the potential for cross-border network capacity to enhance the value of an integrated firm's generators could provide a stronger commercial rationale for the construction of an interconnector than for an independent operator able to rely on usage charges only. Equally, an independent operator may delay investment due to the uncertainties over the future utilisation of its asset if integrated groups are subsequently expected to build rival interconnectors. This would have the effect of further reducing the market price differentials, and hence average utilisation across all interconnectors.<sup>7</sup> Finally, it is possible that an integrated operator would be able to provide ancillary balancing services more effectively due to its greater ability to coordinate the operation and scheduling of interconnector, transmission, and generation capacity in near-real time.

- **Secure access to generation capacity.** A feature of some generation markets is the difficulty of aggregating consumers' willingness to pay for added generation capacity to provide the optimal level of supply security. This is partly the result of widely varying risk preferences of different consumer groups (more risk-averse consumers value additional spare generation capacity) and also the disincentive on consumers to reveal this (the benefits of spare generation capacity are generally shared by all consumers, but the costs may be concentrated on those who claim they wish to pay for it, which rationally they would not reveal). It is conceivable that a vertically integrated firm could overcome these informational asymmetries more effectively due to its greater knowledge of customers' demand patterns, and the ability to match investments in generation and network capacity more closely to deliver a given quality of service. In comparison, the regulatory performance incentives and penalties imposed on an independent network operator may not accurately reflect consumers' preferences, thereby leading to inefficient levels of network investment.
- **Research and development.** A key policy aim of the Commission is to improve energy efficiency and the expansion of new renewable generation technologies, both of which will potentially require large and sustained R&D effort. Whereas vertically integrated monopolies are potentially able to spread the costs of R&D over a larger cost base, independent transmission operators focusing on a single line of business might be less able to do the same. Moreover, a broader scope of activity undertaken by an integrated utility is likely to be able to apply new innovations in a variety of contexts, thereby internalising the benefits of R&D investment to a greater extent.<sup>8</sup>

These considerations highlight the potential ways in which vertical integration may have, or could in future, facilitate the creation and functioning of a competitive EU energy market through increased tangible and intangible investment. If so, this could improve social welfare, but only where there is also a sufficient level of downstream competition to prevent anti-competitive behaviour—for example, through entry foreclosure, predatory pricing, and generally discriminating between potential market entrants in access to commodity supplies, networks, and customers. Following the sector inquiry, the Commission has found this not to be the case. That is, the degree of downstream competition is unlikely to be sufficient to rule out the possibility of anti-competitive behaviour occurring now or in the future. Accordingly, a new balance in favour of greater competition is necessary.

It is useful to consider which of the options for further structural unbundling identified by the Commission

(ie, adopting a policy for ownership unbundling or ISOs) is likely to simultaneously increase competition, retain the necessary investment incentives, and minimise the costs of sector-specific regulation to prevent the potential for repeated breaches of competition rules.

## Ownership unbundling

A key justification for the Commission's preference for this policy option is that it strengthens incentives for operators to maximise the utilisation of transmission networks, and not to favour any particular user. As a result, the Commission argues that the lack of economic interests in other assets for separately owned transmission networks would therefore imply that regulatory regimes could be simplified. This may be the case, although a number of regulatory incentive regimes across the EU may need to be redesigned in any case in order to improve quality of service and security of supply.

A second, closely related, argument advanced by the Commission for ownership unbundling is that the 'burden' on national regulatory authorities would be substantially reduced, while preserving investment incentives. One of the necessary conditions for this assertion to hold is that there must be no substantive countervailing 'synergies' from vertical integration, something that the Commission indeed appears to support.<sup>9</sup> Under this assumption, any additional monitoring to prevent companies from distorting competition under vertical integration is likely to tip the balance in favour of ownership unbundling. However, it remains unclear whether this is actually the case, especially since this article has highlighted that there are several ways in which a vertically integrated market structure may support investment.

A possible third argument for ownership unbundling, not emphasised in the sector inquiry, is the potential for the financial resources to be freed up from integrated groups. This opportunity materialises as a result of the generally favourable treatment by credit rating agencies of the debt issued by network utilities, particularly transmission and distribution companies. This typically enables 'pure' network companies to borrow at lower interest rates compared with firms operating in competitive market segments such as generation and retail. Therefore, other things being equal, it is conceivable that if integrated energy firms were to dispose of their interest in transmission networks, a number of implicit financial cross-subsidies would unravel. This would be expected to reduce the cost of capital for transmission networks, although it would also be likely to increase the required margins for the remaining generation and retail businesses. Whether this is broadly beneficial would depend on the requirements for additional investment in different segments of the energy supply chain. For example, if the majority of new capital investment in the EU is expected to be in network

infrastructure (eg, capacity expansion to accommodate renewable generation and more interconnectors), it may be possible to fund this more efficiently with additional debt issuance by fully unbundled transmission networks.<sup>10</sup>

## ISOs: a 'third way'?

An alternative to ownership unbundling is to pursue the mandatory unbundling of system operators. While this 'halfway house' could present an attractive intermediate option to some companies, it remains to be seen whether Europe's integrated energy companies would be able to make a sufficiently strong economic and practical case in support of it—that is, whether this option balances the needs for greater ex post competition and stronger ex ante investment incentives more effectively, and whether it could easily be implemented. Ultimately, this case could only be made with a robust cost–benefit analysis, something that is currently complicated by the lack of detailed proposals from the Commission on how this option would operate in practice.

Nevertheless, it is important to note that the regulatory 'burden' and companies' compliance costs under this option are likely to be substantial, and should not be underestimated. Consequently, it is not clear at this stage that the expected increase in market competition under this proposal would be sufficient to justify the cost of transition, particularly if the Commission were to suggest mere legal separation of the ISO from the existing transmission system operator (TSO), which is both the owner and in charge of system operations.

An equally important concern is whether the ISO model would provide sufficient ex ante investment incentives, especially as the ISO itself is unlikely to have the financial resources to support new investment without the TSO. As a result, having a separate ISO is likely to increase the need for national regulatory authorities to specify detailed regulations for the appropriate interaction with the TSO. For example, it is possible that there would need to be detailed regulations and

guidelines setting out the conditions under which new capacity expansions are necessary. Moreover, it is likely that the incentive regimes for system balancing will need to be redesigned since this would need to codify the optimal trade-off between ongoing balancing costs and the value of new transmission investments and security of supply. Both of these are likely to be difficult to quantify, and it is therefore questionable whether the ISO model is workable.

## Conclusion

The energy sector inquiry has shown that competition in the EU's energy markets is not effective. A particularly important plank in the Commission's reform strategy is to introduce greater structural unbundling, with ownership unbundling of TSOs being the preferred option. This is considered by the Commission to be the most effective and low-cost method of increasing ex post competition since TSOs would have the incentive to maximise utilisation of existing assets, and it is thought that there would be no forgone synergies from vertical integration. It remains unclear from the Commission's research what the impact of further structural unbundling on ex ante investment incentives would be.

This article has indicated that vertically integrated energy companies do enjoy a number of synergy benefits, and that this is likely to make forced divestment of TSOs costly. In particular, this article has shown how ownership unbundling, while potentially increasing competition, could negatively affect incentives for network investment.

An alternative policy response suggested by the Commission is the creation of ISOs to facilitate the mandatory contracting-out of transmission system operations by vertically integrated firms. As a possible compromise between the current, vertically integrated market structure and ownership unbundling it is likely to improve ex post competition. However, it remains to be seen whether this 'third way' could be made to address the concerns over ex ante investment incentives.

<sup>1</sup> See, for example, European Commission (2005), 'Report on Progress in Creating the Internal Gas and Electricity Market', November 15th.

<sup>2</sup> European Commission (2007), 'DG Competition Report on Energy Sector Inquiry', January 10th.

<sup>3</sup> There may be other strands to any reform package, such as the development of an EU-wide foreign policy in relation to gas and oil supplies.

<sup>4</sup> According to Article 7(1) of Regulation 1/2003, structural remedies (including ownership unbundling) may be imposed by the Commission 'where there is no equally effective behavioural remedy' available, and where it is 'proportionate' to the infringement committed under Articles 81 and 82 of the EC Treaty.

<sup>5</sup> European Commission (2007), *op. cit.*, Executive Summary, p. 12, para 55.

<sup>6</sup> For example, even where vertical agreements effectively foreclose the market to new entrants, the presence of countervailing consumer benefits may prevent a potential breach of Articles 81 and 82. See European Commission (2007), *op. cit.*, Executive Summary, p. 10, para 46.

<sup>7</sup> This effect is exacerbated where interconnector capacity is 'lumpy' since this is likely to result in excess capacity relative to demand.

Uncertainty over the rate of demand growth would therefore further increase the risk and required returns to the project.

<sup>8</sup> Research has shown that, in some cases, deregulation and market restructuring has had a negative impact on R&D effort and intensity. See, for example, Sanyal, I. and Cohen, G. (2004), 'Deregulation, Restructuring and Changing R&D Paradigms in the US Electric Utility Industry', Department of Economics and IBS, mimeo, Brandies University; and Markard, J., Truffer, B. and Imboden, D.M. (2004), 'The Impacts of Liberalisation on Innovation Processes in the Electricity Sector', *Energy and Environment*, 15:2, 201–14.

<sup>9</sup> European Commission (2007), *op. cit.*, Executive Summary, p. 12, para 56.

<sup>10</sup> A potential concern with a relatively highly leveraged financial structure is the potential for greater risk aversion if capital investment projects are perceived as too risky. If this were to be the case, incentives for capacity expansion may be reduced.

If you have any questions regarding the issues raised in this article, please contact the editor, Derek Holt: tel +44 (0) 1865 253 000 or email [d\\_holt@oxera.com](mailto:d_holt@oxera.com)

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