

Agenda

Advancing economics in business

Market power in the power market?

Not for the first time, Ofgem, the GB energy regulator, has proposed increasing its regulatory toolkit to address potential exploitation of market power in wholesale electricity. Is it possible to distinguish between good and bad price spikes, and what are the implications for competition law enforcement and market design?

In March 2009, Ofgem launched its consultation on the need for greater authority to address market power concerns in the wholesale electricity sector.¹ This followed the closure in January—despite Ofgem's concerns—of its market abuse investigation into the behaviour of the two major Scottish generators, Scottish Power and Scottish & Southern Energy, because the probability of finding an infringement under the Competition Act 1998 (CA98) was thought to be low.²

Competition concerns in the generation sector in England and Wales are not new. However, since the Pool price investigations in the 1990s,³ there have been two important changes: the market rules changed with the adoption of the New Electricity Trading Arrangements (NETA) in 2001; and the structure of the market changed through power plant divestment, new entry, and the widening of the market to include Scottish players in 2005.

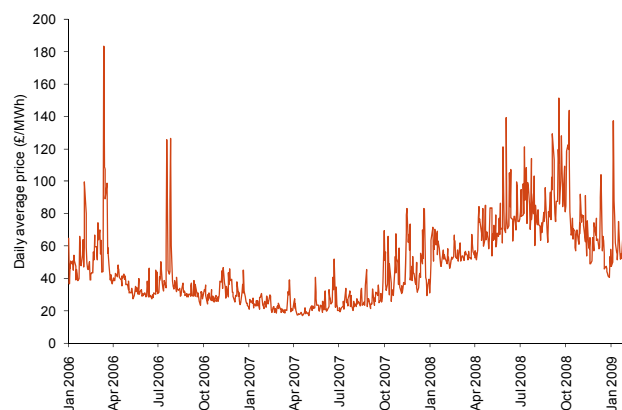
Ofgem's proposals suggest that it considers that the competitive process in the GB electricity market may have taken two steps forward and three steps back. Clearly, the requirements of the electricity system have changed over this period: the operation of the market must now coordinate the behaviour of electricity generators in the context of significant grid investment, more renewable generation, and environmental limits on the use of certain power plant.

This article seeks to address whether these changes are likely to make detecting market abuse any more probable—or more difficult—and thus whether Ofgem needs to strengthen its powers in this area.

Understanding price spikes

Ofgem has expressed concern that the GB wholesale electricity sector is vulnerable to undue exploitation of market power, and that this could lead to higher prices

Figure 1 Daily average APX prices



Note: APX spot prices represent within-day trades on the APX Power UK exchange.
Source: APX Group.

and a reduction in the competitiveness of the market.⁴ It concludes that there appear to be only three credible approaches to addressing these concerns: a licence condition to allow ex post investigation of 'suspect' price spikes; price caps; or some form of divestment.

The key question that underpins Ofgem's concerns therefore relates to whether it is possible to draw a distinction between a good price spike and a bad one.

Figure 1 shows the typical frequency and size of price spikes in the wholesale electricity market in recent years. Assessing whether such spikes are the result of an exploitation of market power requires an understanding of the price-formation process, and the way that spikes translate into economic signals for investment.

Prices respond to changes in the cost of the inputs of electricity generation (eg, coal, gas and carbon prices), which are a function of volatile and increasingly global

commodity markets, as well as changes in demand for electricity—which, in the case of a cold snap, may require more expensive power plant to generate.

The main challenge to understanding whether a spike is good or bad, however, concerns the component of prices that reflects ‘scarcity rents’, which occur when the margin between available capacity and demand is particularly small. That is, prices tend to be higher in peak periods, which is a necessary signal of the need for investment in both new generating plant and transmission networks in order to meet that demand. This result has been well studied in the peak-load pricing literature.⁵

Ofgem points out that price spikes in response to underlying scarcity are a necessary feature of a properly functioning market, and that under its favoured licence condition, ‘generators who respond to overall scarcity would not be subject to enforcement action’.⁶ Indeed, the effect of removing these signals through price caps, or the threat of intervention, might lead to underinvestment in all types of power plant, due to the loss of revenues associated with high prices in peak periods. Such revenues could represent a substantial contribution to the fixed and capital costs of new plant, and their removal might lead to underinvestment through the process commonly referred to as the ‘missing money problem’.⁷

However, Ofgem does not go on to explore what a response to capacity scarcity might look like in order to distinguish between good and bad spikes.

At its simplest level, a response to scarcity might be considered to be the level of prices that, in the long run, are sufficiently high to avoid the ‘missing money’ problem for a new generator. One view of the appropriate level of prices might therefore be to differentiate not between particular price spikes, but rather between a series of spikes, and to assess whether total revenues would be sufficient to remunerate investment.

Alternatively, over shorter timeframes, an appropriate signal for investment can be created if prices in any period reflect the value to users of avoiding a loss of power: the value of lost load multiplied by the probability of lost load. In that way, new generation would be encouraged by the price signal, up to the point at which the cost of adding additional capacity outweighs the benefits of reducing the probability of lost load.

Both of these approaches are evident in the context of discussions on the appropriate form of ‘capacity

payments’, a mechanism put in place in many electricity markets (although not the GB market) to provide an additional revenue stream to generators in order to ensure that sufficient investment is made.

The need to consider market arrangements, their incentives, and the implications for monitoring the pricing behaviour of generators is not surprising. The competition response to Ofgem’s previous attempt to introduce a similar licence condition is examined below.

History repeating itself

In 2001 the Competition Commission (CC) upheld an appeal against Ofgem’s proposal to introduce (in 2000) a broadly framed licence condition that would prohibit conduct amounting to an abuse of a position of substantial market power (the Market Abuse Licence Condition, or MALC).⁸ The MALC was motivated by recurrent concerns throughout the 1990s that wholesale electricity price movements did not appear to reflect changes in supply and demand and underlying market conditions.

Ofgem’s investigation into Pool prices in the summer of 1999 found increasing evidence that certain generators had the ability and incentive to raise prices, due to the limited opportunity for substitution between ‘price-setting’ plant in the short run. It found that this was exacerbated by a lack of demand-side response and the complexity of trading rules that determined both the Pool price and capacity payments.

Despite this, the CC found that continuing the unmodified licences of generators British Energy and AES would not be against the public interest. It acknowledged that opportunities may arise for generators with relatively low market shares to exercise market power, due to the nature of the electricity market, while also noting the important influence of market rules on the opportunities and effects of doing so.

The CC concluded that the wholesale electricity market was vulnerable to the manipulation of market rules because of the need for often complex arrangements to balance the system. On this basis, it encouraged the introduction of NETA and a move away from the rules under the Pool as soon as possible.

Furthermore, the CC suggested that the proposed broadly framed MALC would be likely to give rise to uncertainty, because of the difficulty of distinguishing between abusive and acceptable conduct, and would therefore risk deterring normal competitive behaviour.

What's changed since 2000?

In its 2008 review of previous cases, the CC concluded that the decision not to support the MALC was justified by subsequent market developments.⁹

Ofgem's current proposals therefore raise the question of whether the market has changed in such a way as to lead to a different set of concerns and to now require additional powers.

The most notable change since 2000 has clearly been the change to the trading arrangements. The introduction of bilateral trading under NETA (replacing the administered Pool and its much-criticised method of calculating capacity payments) has made the trading arrangements similar to those of other commodity markets, and is likely to have reduced the system's vulnerability to the manipulation of market rules.

While this may point to a reduction in both the incentive and ability of generators to manipulate prices under NETA (relative to the Pool), the changes have inevitably led to a loss of transparency in the price-setting process.

A second improvement has been the reduced concentration of players following plant divestment, and the inclusion of Scotland with the introduction of the British Electricity Trading and Transmission Arrangements (BETTA) in 2005, which heralded the formation of the single wholesale electricity market in Great Britain. Both of these measures are likely to have reduced the ability of a single player to influence forward prices.

However, recent years have seen a steady increase in transmission constraints,¹⁰ and the limitations of the transmission network, combined with an interim policy of 'connect and manage' to accommodate new renewable generators more rapidly,¹¹ has seen an increasing reliance by the system operator on generators to balance the system.

That said, a greater dependence on generators to help balance the system does not, in itself, point to the need for a new licence condition. This would be more likely to depend on whether detecting and enforcing the behaviour of generators under these circumstances is different to doing so at any other time, or in any other market.

Is electricity different?

The proposal for additional regulatory powers to address Ofgem's concerns suggests that electricity is sufficiently different to other markets to make the application of current competition law ineffective.

Electricity has a number of features that stand out in comparison with other 'commodity' markets (including limited storability and low elasticity of demand and supply over particularly short periods), which might be expected to lead to large price movements.¹²

These features also have implications both in the context of a market investigation for the analysis of the relevant market, and for market power and the assessment of pricing behaviour, recognised in the joint Office of Fair Trading and Ofgem guidance on applying competition law to the energy sector.¹³ This guidance suggests that:

- supply and demand substitution may be considered over a much shorter period—and on the basis of larger price increases—than in other markets;
- the relevant market itself may be of a temporal nature due to limited storability;
- market shares may be of less relevance in assessing dominance.

This suggests that defining the relevant market may not be straightforward, and in the presence of transmission constraints could be narrow in both a geographic and temporal sense. It is less clear that this means, as Ofgem suggests, that participants are less likely to meet the CA98 dominance test as a result. It would appear that the degree of dominance can be assessed against the following definition used by the European Commission:

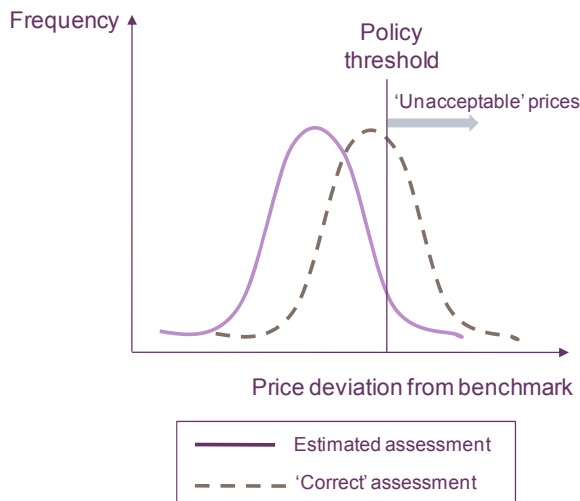
a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained in the relevant market by affording it the power to behave to an appreciable extent independently of its competitors, its customers, and ultimately of the consumers.¹⁴

Determining whether the level of price represents an abuse of dominance requires an understanding of the counterfactual. That is, evaluating whether pricing is excessive would require an assessment of the level of prices that would have occurred without the alleged behaviour, or some evidence that long-run profitability exceeds an appropriate risk-base measure.

The challenge of determining an appropriate competitive benchmark that includes scarcity rents may, at first glance, indicate the motivation for Ofgem's proposal, or for a form-based set of rules (such as artificial pricing limits) that lower the burden of proof required to police the market.

However, such a move would be in danger of focusing excessively on short-run price movements, which in the long run may not persist, or may not lead to an

Figure 2 Risks of mis-classifying good and bad price spikes



Source: Oxera.

increase in profitability compared with an appropriate competitive level.

If a crude pricing rule were chosen the danger would be the identification of false positives. That is, the erroneous rejection of the notion that the observed prices are competitive, as shown Figure 2. This will be the case where the model used to assess price spikes does not allow sufficient sensitivity of prices to capacity scarcity, or does not properly assess the long-run impact of price movements on profitability. Relatively high prices that may, nonetheless, be 'good spikes' might therefore attract inappropriate intervention.

A market power licence condition could result in lowering the burden of proof necessary to establish whether particular behaviour represents an exploitation of market power. However, it is not clear that electricity is sufficiently different from other commodity markets to justify form-based rules (such as artificial pricing limits) or any lower burden of proof to show that the behaviour in question has, as required under the CA98, caused significant harm to competition.

Back to market rules

A useful step in reducing the likelihood of errors in the assessment of price spikes (and which would also help in the application of competition law) would therefore be to improve the transparency of price formation.

Detecting good and bad spikes is a question that the existing trading arrangements are not well suited to monitor. First, the energy price within BETTA effectively bundles the compensation required by generators for both the energy delivered and the 'insurance' element of their contribution to a capacity margin, which is required for long-run system security.

This points to the need for reform to the existing arrangements in order to provide a separate revenue stream to generators for the availability of capacity, in addition to the energy product. Not only could this bring more stability and predictability to prices to help encourage new investment, but it would also allow more effective monitoring of deviations—in capacity and energy prices—from expected levels.

Prices for the energy product might be expected to lie within the bounds of the short-run costs of plant on the system, while capacity prices could be designed to have a lower bound to cover fixed and capital costs and to respond in a predictable way to capacity scarcity. The design of such a mechanism would clearly be crucial. Potential designs would need to be shown to be transparent, send efficient price signals, and minimise potential gaming of the mechanism.

A second issue relates to the rules governing the use of the Balancing Mechanism by both the system operator and generators. Under the current arrangements, the extent to which generators rely on revenues earned by helping to balance the system within the Balancing Mechanism or other ancillary contracts can only be meaningfully assessed alongside the revenues earned by selling power to suppliers. Understanding these prices cannot, therefore, be seen in isolation, as the level of prices might be expected to be only weakly related to accepted bids and offers for power by generators elsewhere on the system, which may or may not be substitutable.

A better understanding of this price-formation process may be gleaned by creating sharper incentives on the system operator to induce more competition between different ancillary products, such as actions taken in the Balancing Mechanism, and contracting for services ahead of time.

Conclusion

There is a compelling argument that the demands on the electricity system have changed over recent years, and that the expansion of the England and Wales market to include Scotland, coupled with a policy to encourage the connection of renewable capacity without an immediate corresponding step change in transmission investment, has led to increased reliance on some plant to balance the system.

However, it is less clear that this necessarily means that markets cannot be defined appropriately in order to apply competition analysis effectively, or that the solution to the concerns lies in additional regulatory powers rather than reform of the current trading arrangements.

Ofgem is right to be wary of pricing limits imposed during certain periods. Such a measure could restrict

the abuse of market power, but given that market power may be temporary, it would risk unduly restricting the actions of certain generators in other periods when they may face pricing constraints.

Ofgem's preference for a market power licence condition would appear to be justified only to the extent that it mirrors the need for any abuse of dominance investigation. It is not clear that there is a rationale for form-based rules, such as artificial pricing limits, or any lower burden of proof that the behaviour in question

has caused significant harm to competition as required under CA98.

There would be merit in first assessing the role of capacity mechanisms to help separate the energy component of prices from scarcity rents, as well as the structure of the Balancing Mechanism, and the incentives on the way the system operator uses it to balance the system during times of constraint, before resorting to further regulation.

¹ Ofgem (2009), 'Addressing Market Power Concerns in the Electricity Wholesale Sector—Initial Policy Proposals', March.

² Ofgem (2009), 'Ofgem Closes Competition Act 1998 Case against Scottish Power and Scottish and Southern Energy', press release, January 19th.

³ The Electricity Pool of England and Wales, the former wholesale market mechanism for trading electricity, which ceased to function following the introduction of the New Electricity Trading Arrangements (NETA) on March 27th 2001.

⁴ Ofgem (2009), op. cit., p. 4.

⁵ See, for example, Williamson, O. (1966), 'Peak Load Pricing and Optimal Capacity Under Indivisibility Constraints', *American Economic Review*, 56:4, Part 1, September, pp. 810–27; and Joskow, P. (1976), 'Contributions to the Theory of Marginal Cost Pricing', *Bell Journal of Economics*, 7:1, Spring, pp. 197–206.

⁶ Ofgem (2009), op. cit., p. 29.

⁷ See, for example, Joskow, P.L. and Tirole, J. (2005), 'Reliability and Competitive Electricity Markets', September, University of Cambridge, Cambridge Working Papers in Economics, No. 0450.

⁸ Competition Commission (2001), 'AES and British Energy: A report on References Made Under Section 12 of the Electricity Act 1989'.

⁹ Competition Commission (2008), 'Evaluation of the Competition Commission's Past Cases', January.

¹⁰ 'Constrained periods' refers to times at which the electricity network is not able to deliver the contracted power flows of generators and suppliers without additional balancing actions.

¹¹ For a summary of increased balancing costs, as well a discussion of constraints, see National Grid (2009), 'Consultation Document: Locational BSUoS Charging Methodology', March.

¹² See Cartea Á (2009), 'Hedging Your Bets: Why Pay over the Odds for Forward Electricity?', *Agenda*, April. Available at www.oxera.com.

¹³ Office of Fair Trading (2005), 'Application in the Energy Sector: Understanding Competition Law'.

¹⁴ *Hoffmann-La Roche & Co AG v Commission of the European Communities*, Case 85/76 [1979] ECR 461, para. 38.

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

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