

Insight is a new, occasional feature of *Energy Spectrum*. In it we provide the floor to colleagues, collaborators and customers to provide an informed view on a matter of topical concern to policy makers or regulators. We do not have to agree with the point of view, but it must be reasoned and likely provide interest to our readers. The only rule is that we have a right of reply.

What better way to kick off than with a comment from former electricity regulator Professor Stephen Littlechild on the very current issue of electricity cashout prices, with decisions on BSC modifications P201/202 expected early this month.

Imbalance prices, tolerance bands and quantity premium bands

Professor Stephen Littlechild

This note argues for a quantity premium band (or bands) of imbalance prices based on the system operator's imbalance costs, not on market price. The proposal does not depend on any argument that small suppliers need or should have special treatment. The proposed basis of pricing may be compared with the actual basis of imbalance pricing, either before or after P194 or P205, either with or without P201 or P202. Quantity premium bands would be more cost-reflective, give more accurate incentives to balance, and be more conducive to competition.

Background

In simple terms, the imbalance price in each half hour is calculated by ranking in increasing order of cost the purchases made by the system operator (SO) to balance the system. (In practice it is rather more complicated, of course.) Before P194 the imbalance price was set equal to the average cost of these actions. A strict marginal cost imbalance price would have set the imbalance price equal to the cost of the last (most expensive) MWh purchased by the SO. P194 set the imbalance price equal to the average cost of the last 100 MWh of purchases. P205 would use the last 500 MWh.

Proposed modifications P201 and P202 seek to introduce a Tolerance Band for imbalance prices. Market participants would be charged a lower price, related to market price rather than to imbalance costs, for the first 20 MWh of imbalance. By a majority view, Elexon's BSC Panel took the view that these modifications should not be made. The tolerance band charges would depart from the principle of cost-reflective charges, would not provide appropriate incentives to balance, and would be detrimental to competition. The proposed modifications are presently under consideration by Ofgem.

Average cost and marginal cost pricing

Because the SO's purchases are ranked in increasing order of cost, marginal cost is always above average cost (or at least not below it). The P194 price is somewhere between the two. The P205 price would be between P194 price and average cost.

It is sometimes said that marginal cost is the economically correct or most efficient basis for pricing. This is not necessarily the case. All methods of pricing have advantages and disadvantages. The challenge is to find the basis that is, on balance, the most advantageous (or least disadvantageous).

Marginal cost pricing has the advantage that it reflects cost at the margin, and therefore gives a more accurate signal to a supplier or generator as to the benefits (or otherwise) of trying to adjust the extent of imbalance. But it has the disadvantage that it may be erratic, especially where the price order can be distorted or "polluted" by system actions, and may be susceptible to manipulation. It will also recover more revenue than total cost. The distribution or (mis)application of the resulting surplus may be problematic. The absence of a requirement to break even may reduce efficiency and accountability.

Average cost pricing has opposite characteristics. It has the disadvantage that it does not reflect cost at the margin. But it is more stable, less susceptible to manipulation, and just recovers total cost.

The P194 price lies in-between: it is more reflective of cost at the margin than average cost, but less so than marginal cost. It is less erratic and less susceptible to manipulation than marginal cost, but more so than average cost. Its total charges still exceed total cost. A P205 price would have advantages and disadvantages closer to those of average cost

Quantity discounts and quantity premium bands

The problems just mentioned arise not only because marginal cost is above average cost, sometimes considerably so, but also because the solution is constrained to be a single price. It is instructive to consider how businesses treat situations where marginal cost is less than average. They do not constrain themselves to a single price.

Where marginal cost is below average cost, marginal cost pricing enables increased sales to be made, which is more efficient. The disadvantage is that charging on this basis leads to making a loss. Many businesses therefore use quantity discounts. The basic price reflects the cost of smaller quantities, but discounts are available to reflect the lower costs of supplying larger quantities. This enables the business to charge a price at the margin that is closer to marginal cost while still covering total costs.

The tolerance bands in P201 and P202 introduce the concept of different imbalance prices for different levels of imbalance. It is possible to use this idea without using the market price as a basis for setting the imbalance prices. The imbalance price for the first 20 MWh of imbalance per supplier could reflect the costs of meeting imbalance requirements up to that level. A higher price – a quantity premium – could be charged for amounts above that, reflecting the costs of meeting imbalance demands above 20 MWh.

It is for others to determine how many bands to set and where to locate them. It might be relevant to have regard to the variation in sizes of suppliers. For example, there might be three bands: up to 10MWh, 10–100MWh, and over 100MWh. Precisely how each of the imbalance charges would be set is for further discussion by the experts in these matters.¹

Evaluation

The argument for this present proposal does not in any way depend on smaller suppliers (or generators) being discriminated against by the system, or facing a lack of liquidity or having a special need that should be met. Nor is the imbalance price of any band based on an exogenous benchmark such as market price, with or without a premium. All imbalance prices reflect the costs incurred by the SO.

These banded imbalance prices would be more reflective of cost than a single price set equal to marginal or average cost, or at some P194 or P205 point in between. They would just recover total cost *and* reflect cost at the margin. They would provide appropriate cost-reflective incentives to all suppliers, whatever their size, to take balancing actions that are economic compared to the costs that will be incurred in the balancing mechanism. For that reason they seem more likely to promote effective competition.

The costs of implementation would need to be calculated, but the quantity premium bands could be tailored to whatever degree of fineness is considered appropriate. This would reflect the costs of greater differentiation as well as the benefits. Artificial division of a larger supplier into smaller ones would not be a problem. Proposal P201 devised a way of dealing with this.

Conclusion

Quantity premium bands of imbalance prices would seem worth further consideration. They could reconcile the concerns of small and large suppliers, other market participants and the SO. They would also be consistent with the cost-reflectivity and competition objectives of the BSC and Ofgem.

Energy Spectrum comment:

We have little to add to this comment, and believe that the proposal deserves urgent consideration. Be it P194, P201, P202 or P205, the industry modification groups have struggled to balance efficiency and competition objectives. But as Professor Littlechild points out, the quantity premium band approach enables settlement to charge a price at the margin that is closer to marginal cost while still covering total costs.

¹ In simple terms, consider the following possibility. For each supplier (or market participant) in each period, take the minimum of its actual imbalance and 20MWh, and sum over all suppliers. Calculate the total cost of meeting this quantity from the lowest cost purchases in the stack, and divide by the quantity involved. This gives the imbalance price for the first 20MWh band. Repeat for successive bands.