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Locational structure of distribution use of system charges: background paper for presentation to DCMF 19 June 2008

1. This paper examines some vulnerabilities of the structure of electricity distribution use of system charges to allegations of competition law infringements.

2. We limit our examination to risks of exploitative abuse. Exploitative abuse is characterised as an unfair exploitation of a network operator's monopoly to the direct detriment of one or more of its customers (and/or customers further downstream, if excessive charges are passed down a supply chain).

Tests for exploitative abuse

3. Exploitative abuse can take various forms such as poor quality services, lack of investment, or high prices.

4. We focus on pricing. The question is therefore under what conditions a price is so high as to be abusive.

5. That question only arises if there is a relevant dominant position. If a price is constrained by effective competition then no test of abuse is needed.

6. The case law points to two main elements of the relevant test of fairness for prices.

7. First, a price is only excessive if it is higher than the price that would prevail if there were normal and sufficiently effective competition. What this means in each case is a question of fact: a complaint needs evidence about a counterfactual and its relevance.

8. Second, a price is not unfair if it is objectively justified. A justification exists if the pricing regime contributes to a legitimate commercial or policy objective, and the disputed price is no higher than what is necessary to achieve that legitimate objective.

9. A comparison with a hypothesis of normal and sufficiently effective competition can be based on the identification of specific market features. The relevant features are those which are present in the actual market, but which would not be present under normal and sufficiently effective competition.

10. Using a test for exploitative abuse based on the notion of market feature enables the alleged exploitative and unfair character of a price to be assessed without relying on speculation about a completely theoretical idea of a competitive price level.

Skeleton of an exploitative abuse allegation

11. To develop an allegation of exploitative abuse against a distribution network operator, given the description of exploitative abuse outlined above, a customer needs to:

    (a) Identify one or more market features that restrict competition in the supply of use of system or substitutable services.

    (b) Show that such market features lead to it facing materially higher charges that they would be in the absence of these features.

    (c) Show that these charges are being imposed by the network operator in a context where it faces no effective competition or potential competition.

    (d) Rebut any objective justification that might be put forward in response.

12. We have identified a potential way to meet the first two requirements, based on the following assumptions. These assumptions would of course need to be established as facts for an actual complaint.

13. The market features are matters such as the compulsory purchase rights under the regional distribution licence, and the network operator's existing planning permissions and rights over land e.g. easements.

14. These market features restrict competition by preventing the customer from building its own private circuit bypassing the public network or a part of it; or appointing an independent operator to build such a bypass.

15. Without these features, use of system charges would be competitively constrained by the threat of new build, so that the charge for use of a network element could not exceed a reasonable return and amortisation on the efficient cost of building a bypass.

16. With the market features outlined above, there is no source of competitive constraints on the relevant use of system charges.

17. On that basis, any charge for access at a particular location which exceeds the charge for access elsewhere by more than the reasonable annualised cost of the relevant bypass would be abusive, unless objectively justified.

18. We now consider how various charging methods might be vulnerable to such a claim.

A worked example

19. We use a hypothetical example with the following characteristics.

20. DNO is one of the 14 regional distribution network operators. NET is a set of distribution network elements forming an EHV system, which predominantly serves demand, within DNO's network. NET has a bottleneck at capacity C = 50 MVA.

21. CUS is an EHV demand customer served by NET. Its connection has a capacity of 45 MVA, which it uses at peak time. There are no charges for any sole-use assets.

22. Current peak-time use of NET is D = 49 MVA. DNO has a forecast of g = 0.25 per cent annual demand growth on NET. We consider alternative values for these parameters in scenarios below.

23. DNO's plan to increase the capacity of NET when the capacity constraint is reached is to spend £2 million to increase capacity by 25 MVA to 75 MVA.

24. Replacing NET would cost £5 million, excluding any cost of replacing the land and consents that DNO already has. No additional land or consents would be needed to duplicate NET: such a duplication would also cost £5 million.

25. It would not be practicable for a separate line to be built by someone other than the DNO to allow CUS to bypass NET, or to provide complementary capacity alongside NET. This is due to planning, land use and environmental constraints.

26. DNO has adopted one of the methods for introducing geographical variation in charges which are currently under discussion in the industry. Ofgem has decided, after consultation, not to veto that method.

27. DNO's EHV business comprise two parts: NET, with connected capacity D; and a set of customers connected at a grid supply point GSP (with no material distribution network elements involved in serving them), also with connected capacity D.

28. DNO's method for allocating revenues between voltage levels leads it to recover an average £14/kVA/year at EHV (irrespective of the value of D).

29. For this paper, we take it that there are no material reactive power issues, that operating expenditure is negligible, and that there is no distributed generation.

ICRP charges

30. Under the investment cost related pricing (ICRP) method, the charge for NET is set to the estimated unit cost of reinforcement for NET, annualised by a 40-year annuity at a discount rate of 6.9 per cent, plus a geographically uniform fixed adder. The charge for the other customers is the fixed adder alone.

31. With the assumptions made above, the charge for the use of NET is £7.4/kVA. The use of system charges consistent with average EHV revenue of £14/kVA are £17.7/kVA for customers connected to NET and £10.3/kVA for customers connected to GSP. CUS would avoid charges of £0.3 million a year with a bypass to GSP.

FCP charges

32. Under the forward cost pricing (FCP) method, forecast reinforcement expenditure for the forthcoming 10 years is allocated to forecast load, using the back-loaded time profile specified in the G3 proposal. The only relevant expenditure is £2 million eight years away, which gives a recovery in the current year of about £91,000. This is spread over 49 MVA, giving a specific charge for the use of NET of £1.9/kVA. With the fixed adder, use of system charges are £14.9/kVA on NET and £13.1/kVA at the GSP. CUS would avoid charges of £0.1 million a year with a bypass to GSP.

LRMIC charges

33. The long run marginal incremental cost (LRMIC) method is based on a calculation of the marginal effect of additional demand (a long-run increment) on the present value of future reinforcement costs. This marginal effect is converted into an annual charging rate by using a 40-year annuity, mathematically identical to the one in ICRP.

34. We examine two variants. In LRMIC1, the reinforcement cost incurred when the capacity limit is reached is £2 million, based on DNO's actual reinforcement plan; the increment used is infinitesimally small; and negative charges are permitted. In LRMIC2, the expenditure is £5 million, based on assuming duplication of the NET assets, the increment used in the calculation is set to 1 MVA, and negative charges are replaced with zero.

35. For LRMIC1, the marginal effect of an increase in load of 1kVA is £636 in terms of present value of capital expenditure. This translates into a charging differential of £47.1/kVA, and charges of £37.6/kVA and minus £9.6/kVA. CUS would avoid charges of £2.1 million a year with a bypass to GSP.

36. For LRMIC2, the incremental effect of an increase in load of 1MVA is £1.6 million in present value. This translates into a charging differential of more than £100/kVA. Given the prohibition on negative charges, charges have to be £28/kVA and zero. The charges that CUS would avoid with a bypass come to £1.3 million a year.

Impact of load and load growth assumptions

37. The above calculations are based on NET load of 49 MVA with 0.25 per cent annual growth. Results for some other scenarios are in table 1.

Table 1 Charges avoided by CUS bypass for various loading and growth scenarios

	D = 49 MVA g = 1%	**D = 48 MVA g = 1%**	**D = 49 MVA g = 0.25%**	**D = 48 MVA g = 0.25%**
Time to reinforcement	2 years	4 years	8 years	16 years
ICRP avoidable charge	£0.3m	£0.3m	£0.3m	£0.3m
FCP avoidable charge	£0.2m	£0.1m	£0.1m	£0
LRMIC1 avoidable charge	£0.8m	£1.8m	£2.1m	£1.2m
LRMIC2 avoidable charge	£1.3m	£1.3m	£1.3m	£1.3m

The stand-alone cost benchmark

38. Given the facts assumed above, CUS could probably prove that the cost of building a 45 MVA bypass of NET is less than £5 million.

39. How this is annualised would depend on the CUS's willingness and ability to make a long-term commitment to paying for that network — such dependencies are indeed one of the reasons why the prohibition on exploitative abuse requires case-specific factual analysis and cannot fully replace an ex ante price control regime.

40. We assume that CUS is a substantial and profitable industrial operation, willing to enter into a 10-year RPI-indexed contract, and that it can show that index-linked finance for a bypass on that basis would be available at a rate of 8 per cent (net of RPI) or less. This would give an annuity of the order of £0.75 million, or £17/kVA.

41. Unless the above reasoning overlooks a defence available to DNO, it therefore seems that any charge for CUS's use of NET which exceeds this level is vulnerable to a claim of abuse. This includes LRMIC charges in some circumstances.

Regulatory defences do not apply

42. DNO can reasonably claim that it needs to make a reasonable return on capital. But this is provided through the price control, for example through a fixed adder. It is not necessary to have large geographical differentials in order to achieve financeability.

43. Ofgem's non-veto of DNO's method does not provide any justification or immunity for DNO, since DNO has not been directed by Ofgem to use any particular method or to levy the disputed charges — all that Ofgem has done is not to exercise its powers to intervene, whether under the licence, the electricity regulation legislation or competition law. Nothing can be implied from Ofgem's inaction. It is clear from the judgments of the Competition Appeal Tribunal on admissibility that UK competition authorities do not have a duty to take action against every competition law infringement that they have good reasons to suspect.

Economic justification for ICRP

44. With ICRP, the relevant cost is the cost of replacing the NET infrastructure every 40 years. This cost is spread over a continuous load equal to full capcity. Provided that costs have been correctly estimated (for a reasonably efficient operator), the pricing differential could therefore be justified by cost if needed. If the overall price control is also correctly and reasonably determined, then the fixed adder is justified by the need to recover price control revenue. On that basis, there seems to be a good prospect of establishing objective justification for the pricing structure as a whole.

45. ICRP may fail to achieve Ofgem's apparent objective to give specific incentives to discourage the use of congested distribution infrastructure. But this would not affect objective justification for competition law purposes.

Possible economic justification for FCP

46. With FCP, the relevant cost is a forecast of reinforcement expenditure in the next 10 years, and this cost is spread over load in the 10 years preceding that expenditure. If an objective justification were needed, some questions might be raised (as in the Frontier Economics report) about the rationale for the time profile of that recovery, and the choice of 10 years as the recovery period. It might well be possible for the

network operator to establish the reasonableness of this time profile for recovery of costs. But those questions do not arise in the worked examples presented above, since none of the FCP prices appear higher than the relevant competitive price.

47. Another possible issue with FCP is that it might be possible to construct a scenario in which FCP locational charges are very low (e.g. low loading and low growth so that little reinforcement is needed in the next 10 years), so that almost all of the customer charges come from the fixed adder. In such a case, some customers might complain that they are being faced with an average cost charge even if they use very little of the network. There is a theoretical risk that such a complaint could, in extreme circumstances, be founded, if dominance and relevant market features can be proved.

No economic justification for LRMIC

48. With LRMIC, the relevant cost is the present value of the marginal expenditure that would be incurred by DNO in the future for each unit of load added to the system from the present day onwards, with the same rate of growth for the marginal increment as for total demand.

49. The method neglects asset renewal costs. As regards future renewal of the new infrastructure, this is a reasonable approximation given the discount rate used. It seems that the marginal cost measure is appropriate and sufficiently objective.

50. The annuitisation used in LRMIC has the effect of spreading this marginal change in cost caused by a sustained marginal increase in load, over the load increment in the 40 years starting in the year in which the calculation is made. No part of the forward-looking marginal costs is allocated to a past element of load increment.

51. This part of the LRMIC method may not be objectively justifiable. For example, in the case of a reinforcement a couple of years away, the marginal present value increment associated with bringing forward the time of reinforcement might reasonably be seen as being wholly attributable to load at the time of the reinforcement, or alternatively spread across load over an extended period of time (as in ICRP); but there is no rational basis to allocate a significant part of the cost to load in the year of the calculation and no cost at all to load in the previous year.

52. Furthermore, an attempt at objective justification of charges based on such marginal costs would need to answer the criticism that the marginal change in present value of capital expenditure should not be applied to a customer, such as CUS, which on its own uses the majority of the available capacity. If investment is assumed to have a lumpy character, then the cost of large customer is at most the whole cost — not the marginal cost at current load multiplied by the load imposed by the customer.

53. These issues apply to all variants of LRMIC. In addition, LRMIC2 could be vulnerable to the criticism that additional rules such as the use of a finite-size or the prohibition on negative charges will damage the economic logic of the scheme.

54. We therefore find that none of the variants of LRMIC described in this paper appear capable of providing an objective justification in circumstances such as those of the above example where charges exceed the relevant measure of stand-alone cost.

Appendix: overview of relevant case law on exploitative abuse

55. This appendix provides a very brief introduction to the relevant case law on exploitative abuse.

56. The prohibition on abuse of a dominant position arises from section 18 of the Competition Act 1998. Section 60 of the Act imports EC case law about competition law into the UK regime. Thus, both EC and UK cases have precedent value.

57. The oldest frequently cited EC case involving an exploitative abuse element is United Brands.[1] In that case, the court rejected as unproven an allegation of the European Commission that United Brands Corporation (UBC), a banana importer, had committed exploitative abuse. The Commission's findings of dominant position and other forms of abuse were upheld. The court commented as follows:

> 248. The imposition by an undertaking in a dominant position directly or indirectly of unfair purchase of selling prices is an abuse to which exception can be taken under [Article 82] of the Treaty.
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> 249. It is advisable therefore to ascertain whether the dominant undertaking has made use of the opportunities arising out of its dominant position in such a way as to reap trading benefits which it would not have reaped if there had been normal and sufficiently effective competition.
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> 250. In this case charging a price which is excessive because it has no reasonable relation to the economic value of the product supplied would be such an abuse.
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> 251. This excess could, inter alia, be determined objectively if it were possible for it to be calculated by making a comparison between the selling price of the product in question and its cost of production, which would disclose the amount of the profit margin; however the Commission has not done this since it has not analysed UBC's costs structure.

58. Some authors prefer to emphasise the following paragraph in United Brands:

> 252. The questions therefore to be determined are whether the difference between the costs actually incurred and the price actually charged is excessive, and, it [sic] the answer to this question is in the affirmative, whether a price has been imposed which is either unfair in itself or when compared to competing products.

59. We are unable to make much sense of that paragraph as a test for exploitative abuse. The reasoning that follows in the judgment merely establishes that the Commission was not in a position to prove the excess referred to at paragraph 251.

60. United Brands was a case in which insufficient factual evidence was available for the court to determine whether there had been exploitative abuse. Whilst the judgment is informative, it cannot be expected to provide a full test for exploitative abuse.

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[1] Case 27/76, United Brands v Commission. Links at http://www.reckon.co.uk/open/United_Brands.

61. There are a few other European court judgments. The most relevant ones are preliminary rulings on references from national courts on matters of law only, so again there was no factual evidence in front of the court to which any method or test could be applied. We think that the most informative one about the concept of exploitative abuse is Bodson,[2] in which a funeral company in France was alleged to have charged excessive prices thanks to a monopoly position obtained from local authorities under a concession contract. The court held that it might be possible to determine whether the prices were excessive by comparing them with similar areas in which there was no monopoly concession. This reinforces the view that the analysis must compare the price being challenged with what would occur in a counterfactual hypothesis where of "normal and sufficiently effective competition". Similarly in Lucazeau,[3] where the alleged monopoly had been granted to the copyright collection society at a national level, the court suggested international comparisons.

62. The UK case law puts some more flesh on these bones. The earliest, and still most relevant, case is Napp,[4] in which the Office of Fair Trading established that Napp had committed exploitative abuse by charging excessive prices for its drugs in pharmacies. This was based on evidence that Napp had illegally evicted competitors from the market (through other abuses), and that its profit margins were so high that they had to be higher than what would have prevailed in the absence of the unlawful eviction, i.e. in a market with normal and sufficiently effective competition. The case also confirmed that compliance with an overall price control (PPRS) was no defence.

63. The question of exploitative abuse has been addressed in High Court cases. The main lesson of these judgments is the rejection of the idea that is a practical test of "economic value" to be taken from United Brands. For example, Laddie J explained in the Victor Chandler case[5] why exploitative abuse could not be equated with charging more than production cost or some abstract competitive level.

64. Reconciling this defence of the freedom of monopolies to make commercial profits with the finding of abuse in Napp from earning more than a reasonable profit margin highlights the need to find the correct counterfactual hypothesis of "normal and sufficiently effective competition" to demonstrate exploitative abuse. This leads us to the idea of defining that counterfactual by reference to specific market features — such as the illegal exclusion of competitors in Napp, or the regulatory barriers to competitive entry in Bodson and Lucazeau (and, perhaps, the regulatory barriers to competitive bypass in the case of electricity distribution networks).

65. The question of exploitative abuse in the context of regulated network utilities is likely to be addressed in detail in a forthcoming judgment of the Competition Appeal Tribunal in the Albion Water / Welsh Water case.[6]

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[2] Case 30/87, Corinne Bodson v SA Pompes funèbres des régions libérées. http://go.reckon.co.uk/s12114.
[3] Case 110/88, François Lucazeau and others v Société des Auteurs, Compositeurs et Editeurs de Musique (SACEM) and others, http://go.reckon.co.uk/s752293.
[4] Napp v OFT, CAT and Court of Appeal judgments (2002), links at http://www.reckon.co.uk/open/Napp.
[5] BHB Enterprises v Victor Chandler [2005] EWHC 1074 (Ch), http://www.reckon.co.uk/item/3d0089e4.
[6] See http://go.reckon.co.uk/a68006 for links to relevant documents.