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ENERGY REGULATION BRIEF

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"REGULATORY BENCHMARKING": A WAY FORWARD OR A DEAD-END?

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Price caps provide incentives for efficiency by allowing revenues *to differ from* actual costs. Some regulators infer from this principle that price caps should be set *without reference to* actual costs. The electricity regulators for England and Wales (OFGEM) and the Netherlands (DTe) both recently proposed revenue allowances for electricity distribution networks based on "efficient costs" established by benchmarking. In this brief, we examine benchmarking as a method of regulation. We conclude that benchmarking creates many problems to be solved before it can be regarded as useful for regulatory purposes. Furthermore, some features of benchmarking seem to render it permanently unsuitable for regulation, in which case all attempts at benchmarking will prove to be a dead-end.

The Regulatory Proposals

In July 1999, DTe set out its thinking to date. DTe plans to introduce price caps and chapter 3 of the consultation document explains what the regulator wishes to change. "Rate of return regulation is based on actual costs, whilst price-cap regulation is based on forecast efficient costs, and is thus forward (and outward) looking."[1] In fact the distinction is not so stark, as US regulators continually base price caps on the observed trend in actual costs, not on a forecast of "efficient" costs. However, DTe says that benchmarking is needed to estimate the level of "efficient costs" that distribution companies should reach some time in the future. Chapter 5 of the DTe paper describes the main econometric methods used to estimate "efficient costs", namely Corrected Ordinary Least Squares (COLS), "Stochastic Frontier Analysis" (SFA – a complex form of regression), and Data Envelope Analysis (DEA).

OFGEM has published two sets of proposals for the operating cost allowance to be awarded to distribution businesses in Great Britain, one in August 1999 and an update in October 1999.[2] These papers attempt to establish the efficient level of operating costs for each company using benchmarking. Capital costs are benchmarked separately.

OFGEM's attempt to apply a benchmarking technique is instructive. It shows up many generic problems that DTe is going to face, as will other regulators who try the same approach. Any regulator wishing to use benchmarking more extensively will have to overcome the following problems.

Lack of Economic Logic

It is a fundamental economic principle of regulation that regulators must allow regulated companies a reasonable rate of return on capital after recovery of depreciation and operating expenditures ("opex"). Therefore, separate benchmarking of opex and capital expenditures ("capex") makes no sense, given the potential trade-off between the two. Combining (1) the minimum opex from one company with (2) the minimum capex from

[1] DTe (Dienst uitvoering en toezicht Elektriciteitswet), *Price cap regulation in the electricity sector: information and consultation document*, July 1999, paragraph 3.13.

[2] OFGEM (Office of Gas and Electricity Markets), *Distribution Price Control Review: Draft Proposals*, 12 August 1999, and Letter to the Chief Executives of PES Distribution Businesses, 8 October 1999.

another company will set a cost target that no individual company has ever met, nor could reasonably be expected to meet. OFGEM presents no discussion of this threat to total cost recovery, or of the resulting damage to incentives.[3]

The use of benchmarking is also inconsistent with conventional approaches to estimating the cost of capital (rate of return). OFGEM and DTe propose revenues equal to "efficient" cost levels, but allow companies to earn only a "normal" rate of return derived from average capital market data. In practice, any average capital market data measures the rate of return earned by a wide range of companies exhibiting only *average* efficiency. Companies that manage to be "efficient" (ie on the frontier) will earn returns *above* the average. However, both OFGEM and DTe offer distribution companies only the *average* rate of return for *superlative* efficiency. Both regulators are therefore denying investors in utilities a return which is comparable with that available in other industries.[4] Unless regulators adopt a totally different approach to estimating the cost of capital, this bias will make it difficult for utilities to attract and retain the capital[5] needed to finance their activities.[6]

Doubts Over Robustness

Another fundamental principle of economic regulation is that techniques for setting revenues should be as objective as possible, ie they should use publicly available data and mechanistic formulae. The OFGEM benchmarking fails completely to meet this standard, since both the estimates of cost and the manipulation of the frontier are entirely subjective.

This principle was recognised by the Monopolies and Mergers Commission (MMC) in its review of Northern Ireland Electricity plc.[7] In paragraph 2. 159, the MMC comments on the benchmarking work done by the Director General of Electricity Supply for Northern Ireland (DG) and Northern Ireland Electricity plc (NIE). The MMC says:[8]

> "It appears to us that the application of econometric and other techniques in present circumstances has not been capable of producing useful results. There is disagreement on the most relevant cost-drivers and the appropriate scale factor (to allow for economies of scale). Moreover, the data are difficult to handle because of the wide variety of circumstances faced by companies in the sample…It is also difficult to draw robust conclusions about the performance of NIE because it is at the extreme end of the range in respect of some key variables, such as number of customers and density of population. We are not surprised, therefore, that NIE and the DG, and their respective consultants, were unable to reach agreement on the conclusions to be drawn from the exercises that were carried out. We for our part have not found the results useful in producing reliable indications as to the relative efficiency of NIE compared with the Great Britain PESs. If techniques can be developed to the point where robust results are generated, such work would undoubtedly be a useful tool for future price reviews. We would encourage NIE and the DG to seek to agree on a methodology for the future."

OFGEM's attempt at benchmarking requires a huge amount of subjective judgement which will never produce a consensus. The following points indicate why.

- OFGEM defines an efficient annual "fixed cost" of £25 million (approximately). This figure seems to be an entirely arbitrary figure, based on one consultant's subjective view.

3 In paragraph 18 and annex E of the letter to CEO's, OFGEM tries to improve investment incentives by giving some allowance for opex/capex ratios. However, this allowance is unrelated to total costs and does not clarify overall incentives.

4 The need for utility investors to earn a return *comparable* with that found in other sectors was established in the US in 1923, in the Bluefield case.

5 The Hope Gas case in 1944 at the US Supreme Court added the need for the comparable return to be provided after allowing for the recovery of all other costs, as a condition of attracting capital into the business. This means that US regulators cannot deny fair returns by denying recovery of opex or depreciation.

6 This is a statutory duty of the Director General of Electricity Supply (the electricity regulator). See Electricity Act 1989, Section 3(1).

7 MMC, Northern Ireland Electricity, A report on a reference under Article 15 of the Electricity (Northern Ireland) Order 1992, The Stationary Office, March 1997.

8 In this quote PESs stands for Public Electricity Suppliers.

- OFGEM uses a composite measure of company size to explain variable costs. However, each company can name other factors that explain why its operating costs are above the frontier. The chance of getting agreement on a range of indicators is negligible.[9]

- The input data on costs has been heavily manipulated by OFGEM to produce supposedly "comparable" base costs. However, OFGEM has not satisfied all PESs that this manipulation is reasonable – or even common to all PESs.

- The frontier depends heavily on one company, Eastern Electricity plc, which is an outlyer in many senses. First, Eastern has one of the lowest opex/capex ratios, so its opex figure is bound to be low. Second, Eastern has the largest customer base, so it represents an extreme case. Third, Eastern's costs have undergone the largest manipulation by OFGEM and its consultants, who reduce its "controllable costs" of £151 million by 53 per cent, to give "base costs" of £72 million. Hence, the frontier depends upon a cost item from which OFGEM's consultants have ejected more than half, by procedures that are hard to follow.

Taking all these factors together, one must conclude that OFGEM's proposed frontier is utterly subjective and bears little relation to actual, or even feasible, cost levels. DTe's proposals are not so far advanced. However, even now it is apparent that the *choice* of method (between COLS, SFA and DEA) will inject a degree of subjectivity, let alone its *application*.

The Heavy Burden of Proof

The subjectivity inherent in OFGEM's approach does not mean that benchmarking can never work. DTe recognises many of the problems mentioned above. The MMC expressed a fervent hope that NIE and the DG would agree on a benchmarking method to be used next time. However, benchmarking presents a number of methodological difficulties which, if not overcome, would rule out its use for regulation, because the results are intrinsically biased against cost recovery by regulated companies.

- **Benchmarking makes companies "guilty until proven innocent".** Whatever method is used to define an "efficient" cost frontier, some companies will have costs above it. The use of benchmarking assumes implicitly that high costs are due to *inefficiency*. In fact, companies' costs may lie above a "frontier" due to any number of factors not captured in the analysis. The companies must find out what those factors are, or else the regulator presumes the right to disallow costs because they are "inefficient".

- **The "burden of proof" is unduly onerous.** If a company wishes to defend itself against the accusation that it is inefficient, it must identify the special factors that account for its deviation from the frontier. To do so, any individual company must find factors that explain not only its deviation from the frontier, but the deviations of other companies as well. This requires a detailed knowledge of other companies, and of the factors that determine their costs. Testing a factor (with regression or DEA) is not difficult; identify the relevant factors may be impossible.

These difficulties do not *in themselves* form a legal impediment to the use of benchmarking. However, in combination, they mean that the use of benchmarking will nearly always deny some regulated companies the chance to recover their costs, even if they are efficient. Any system that systematically prevents cost recovery is inconsistent with the need to attract capital for investment and is therefore open to challenge.

[9] The Norwegian regulator, NVE, also tried for several years to reach agreement with the electricity network companies on relevant "cost drivers", but eventually gave up.

Unreasonable Rate of Transition

Any benchmarking technique used to set a target level of costs must also set the time by which the target is achieved. The implied rate of "productivity growth" required to reach the target provides another potentially subjective lever, allowing regulators to prevent cost recovery by cutting prices. Best international practice requires regulators to use a "robust" methodology – ie to extrapolate rates of productivity growth from observed data (historic long-term trends). For electricity distribution in the US, total factor productivity growth has been between 1 and 2 per cent per annum on average over the long run.[10] This figure is measured relative to the GDP deflator; relative to the retail price index (which rises more slowly), the expected total factor productivity growth is lower. Of course, some companies will beat the long-term trend, if they suddenly face stronger incentives for efficiency. In such conditions, US regulators frequently add a "stretch factor" to the target rate of productivity growth. However, even this factor is amenable to analysis; the break in long-term trends in productivity growth is rarely more than 1 per cent per annum.

OFGEM has not provided any analysis of past trends, nor any reason why costs should fall faster in the future. OFGEM's proposals imply a fall of 4.5 to 5.0 per cent per annum in operating costs up till 2001/02, or (say) 2.25 to 2.5 per cent in total costs.[11] This target is additional to the rate of technical progress built into RPI – about 1 per cent per annum. From 2002/03 onwards, companies only have to "match the frontier", but indexing it to RPI incorporates the productivity improvement of the economy as a whole. OFGEM seems to have made no allowance for demand growth, which will increase costs to some degree (even if not proportionately). Altogether, these proposals amount to a very stiff target for productivity growth, which has no robust justification.

Conclusion

Benchmarking looks attractive to regulators wishing to set price caps and maybe one day it will prove successful. OFGEM's attempt is highly subjective and is unlikely to survive detailed scrutiny, but DTe may hope to avoid similar problems, by adopting a more rational and analytical approach. Unfortunately, the Monopolies and Mergers Commission (now renamed the Competition Commission) identified some serious flaws in benchmarking during the NIE review of 1997. Neither OFGEM nor DTe has overcome these flaws yet. Indeed, our analysis suggests that benchmarking will never be robust enough for use in regulation – and it is virtually absent from North America for this very reason. Many regulators still want to try out the method and regulated companies will be forced to respond. However, they should be aware that benchmarking looks like a long and winding path to a regulatory dead-end.

[10] See J. Makholm and M. Quinn, *"X" marks the spot: how to calculate price caps for the distribution function,* Public Utilities Fortnightly, 12/1997.

[11] Assuming that opex is about half of total costs and that the remainder (depreciation and return) is unavoidable.

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