

# Agenda

Advancing economics in business

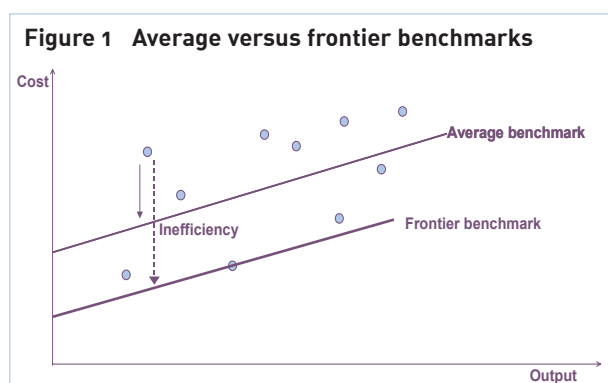
## Has yardstick competition had its day?

**Given the risks and costs involved in setting targets for regulated companies based on the performance of a handful of comparators, why do regulators continue to use frontier benchmarks, when there are cheaper and more conservative approaches available to them? Furthermore, what lessons can be learnt from the UK experience for those implementing incentive frameworks?**

Following price control reviews, regulators assess the previous periodic review period and have the opportunity to learn from each other's experiences when there is a new opportunity for comparative assessment to be undertaken. Comparative performance assessments, such as those undertaken by UK regulators, are designed to emulate a competitive market. If one market leader innovates using advances in technology, competitors attempt to catch up with the efficient frontier through spillover effects and learning. Assuming that innovation is a dynamic process (as described by Schumpeter's 'process of creative destruction'), as companies catch up to the observed frontier, new innovations render the previous innovation 'old' technology and move the frontier further forward.

Yardstick competition uses data from regulated firms relating to the inputs and outputs of their business to identify the shape of the cost function (ie, what do the inputs need to be to produce each level of output?). By moving this cost function to the most efficient operator, a benchmark can be defined that all firms should, in principle, be able to achieve. UK regulators have used variants of this approach to identify the potential savings within an industry. Alternatives to an absolute frontier benchmark include a benchmark at the average industry performance, or the average economy-wide performance (eg, economy-wide total factor productivity). See Figure 1.

Yardstick competition has been used in the UK and internationally by regulators to incentivise companies to reveal their efficient level of costs. However, some observers have noted that, after two decades of regulation, there are still differences in costs between firms subject to yardstick competition, when a greater degree of convergence over time might have been expected. For example, there are still significant



variations in costs between operators in the electricity distribution industry.

It is tempting to hypothesise that the remaining differences in cost structure are due either to noise in the data and modelling process undertaken by the regulator, or to systematic differences caused by companies operating under different conditions. While such issues are acknowledged in some circumstances, regulators have thus far stood by their frontier benchmarks as adding significant incentives to companies to move the industry frontier forward.

Theory suggests that any target (relating to yardstick competition or otherwise) that is credible and achievable should be sufficient to incentivise firms to meet or outperform it, since the company retains a positive share of savings made beyond the target. However, both regulators and the UK Competition Commission (which, in the context of UK regulated industries, functions as an appeals body for regulatory reviews) have acknowledged the value of comparators in regulation, and continue to use frontier methods of assessment.<sup>2</sup>

Part of the reasoning for this may be the significant price reductions made possible as the newly privatised utilities removed the historical inefficiency associated with operating in the public sector. From a political perspective, regulators may face some pressure to challenge companies in order to maintain their credibility. So far, the Competition Commission has approved of the approach taken by regulators in several cases where it has been challenged and, following the recent reviews, none of the electricity or water companies disputed the regulatory determinations at the Competition Commission. This is not to suggest that companies agreed with the approach taken by the regulators on yardstick competition; they will have taken a view on the overall regulatory package rather than focusing on individual elements of it.

## Is yardstick competition still relevant?

Despite approval from the Competition Commission, regulators' approaches to yardstick competition have come under scrutiny from several sources. In July 2005, Water UK<sup>3</sup> published a consultation, 'Future Regulation in the Water Industry', which argues that Ofwat should review its approach to efficiency since there would be no more 'easy wins' and cost reductions are likely to be much lower going forward. Combining this with uncertainty surrounding the data and modelling process, Water UK suggests an overhaul of Ofwat's approach to setting efficiency targets, placing less emphasis on the comparative regime.

Similarly, during the recently concluded electricity distribution price control review, several distribution network operators argued that Ofgem's use of a frontier technique was unnecessary and that benchmarking to the average performance would be more appropriate.<sup>4</sup> This raises the question: why should regulators be assessing companies' performance using comparative efficiency? Should regulators use an industry average performance, or economy-wide performance, or is it still necessary to incentivise companies to catch up to the frontier?

## Costs and risks of yardstick regulation

To make an assessment of the 'efficient' cost level for each firm in an industry, regulators require companies to submit data on a comparable basis, often through a standardised accounting framework or set of guidelines. Regulators benchmark companies not only according to cost-based performance, but also according to performance relating to quality and environmental impact. These assessments, such as Ofwat's annual report on leakage and the efficient use of water, also

require data on other variables such as quality of supply and environmental factors.

A comparative assessment incurs a regulatory burden for the companies, which have to supply data and engage with the regulator regarding the approach. The regulator can help itself and the company by agreeing on a consistent reporting basis such that existing management information systems can be used to collect the data for the regulator, as well as the data necessary for the management of the company to make everyday business decisions.

Besides the regulatory burdens on companies, the regulatory cost that causes the most concern to industry is the unquantifiable (before the review) cost of getting the assessment wrong. The regulator needs to set a sufficiently tough target to provide consumers with the benefits of regulation, while setting the company an achievable target and incentivising it to beat the target by allowing it to keep the gains from outperformance. As the large gaps between firms in terms of cost performance are narrowed, it is increasingly difficult to distinguish noise in the data and modelling process from the potential for cost reductions or improvements in service.

Using frontier techniques leads to the problem that models with a great deal of variance can be interpreted as having large amounts of inefficiency and lead to harsh price caps, when such variance may be the natural variance in costs caused by data collection and inherent differences in operating environments. When this is the case, firms may question the validity of yardstick competition as a tool for setting cost reductions.

The risk of an incorrect assessment associated with using a frontier-based approach may be high if an industry exhibits significant convergence around a common frontier—ie, where there is little variation in costs. In the water industry, there has been some evidence of convergence, as shown in Ofwat's annual unit cost reports, although the evidence is much less clear in electricity distribution. To assess these risks, the regulator needs a robust understanding of the confidence it can place in its estimates of potential savings. The use of cross-checks with alternative techniques and the confidence interval around the benchmark can help regulators understand this level of confidence.

In industries where there are few data points, and where one observation can influence the level of the predicted costs of all participants (as is often the case in network monopolies), firms may have less incentive to drive down costs and share information on industry performance.

Costs and risks of yardstick competition	
<i>Costs and risks</i>	<i>Mitigation</i>
Data collection burden management	Integration with existing information systems Consistency of regulator's requirements
Distinguish noise from inefficiency	Use of techniques that identify noise or establish confidence in results
Small number of comparators	New technology in data recording to model at a disaggregated level

Benefits and opportunities of yardstick competition	
<i>Benefits and opportunities</i>	<i>Limiting factor</i>
Price reductions	Past gains may not be sustainable
Incentives to adjust to changing operating conditions	Uncertainty regarding future operating conditions
Identify leading firms	Are they leading due to performance or favourable operating conditions?
Focus on all areas of output (eg, quality)	How much do consumers value other aspects of output?

## Benefits and opportunities of yardstick regulation

While there are obvious costs to comparative assessments and potential risks for both the regulator and the company, there are also significant benefits. Both Ofgem and Ofwat have claimed benefits to consumers through price reductions as a result of the comparative regime. The Director General of Water Services considers that yardstick competition led to operating costs in 2000/01 being lower in real terms than at any time since privatisation, despite increasing cost pressures from a large capital investment programme and services to customers improving significantly.<sup>5</sup>

Between periodic reviews, the operating environment may change in the form of varying cost pressures (such as a larger or smaller capital programme) and the economic environment (such as changing interest rates and wages). The frontier assessment allows regulators to ensure that firms have reacted to such changes in the interests of consumers and the long-term viability of the business, as a firm in a competitive environment might.

Comparative-based approaches have the additional benefit of highlighting to the company or industry who is defining the frontier (this may be more than one company or business unit), and other companies or units can learn from the technology and operational practices how to improve their own operation. In particular, as monitoring and information systems improve, it is possible to model at a much finer level of disaggregation (such as works rather than company level) than was possible prior to privatisation—for example, enabling more like-for-like comparisons that give companies an insight into how and where cost savings may be achieved.

Historically, the focus of yardstick competition has been on costs and cost reduction. However, after the early gains from privatisation are made, the focus of yardstick competition may move towards quality of output. Yardstick competition can be effective in highlighting the

levels of service that are achievable by companies, and regulators may start to focus on other types of output (such as quality of service) that enhance consumer welfare.

In deciding whether a comparative assessment of firms is warranted, the regulator has to weigh up the relative costs and benefits of such an assessment compared with setting a target based on average performance.

## The UK experience

The UK has been at the forefront of comparative efficiency assessment for the past 20 years. Regulators have faced a series of challenges in implementing yardstick competition and have had to develop innovative solutions to the problems of few comparators and inconsistent data.

The three examples below illustrate the problems associated with comparative efficiency analysis, and how they have been addressed by regulators to ensure that yardstick competition continues both to deliver benefits to consumers and to challenge firms to improve performance and operate at an efficient cost.

### Ofwat: a falling number of comparators

As the water industry has consolidated, the number of comparators in both water and sewerage has fallen. This has made comparisons between companies by Ofwat more difficult as there are fewer independent management styles to generate innovation at the frontier. The regulator's response has been not only to place a value on each comparator, but also to consider extensions to its modelling approach, such as using sub-company-level data in sewerage (ie, area and works level data as opposed to company level); considering the use of data over time; and sense-checking results using a variety of modelling techniques to ensure consistency. Both modelling at a lower level of aggregation and panel data approaches have been considered by the Competition Commission, which concluded that regulators should consider their use.<sup>6</sup>

**Ofgem: the importance of data consistency**

At the 2004 distribution price control review, Ofgem found that companies responded to the regulatory accounting guidelines with data that proved to be inconsistent across companies. This presented the regulator with the challenge of normalising the data to make it comparable. Making ex post adjustments is a second best to having consistent data in the first place, and this may have limited the confidence that Ofgem could have in its results. This is the main aspect of the price control that Ofgem is aiming to improve for the next review,<sup>7</sup> and it is already working with the companies on a new system of reporting, the initial results of which will be published later in 2005. This is also likely to be a problem that Ofgem could face in regulating the gas distribution networks, where the lessons learnt from the electricity distribution price control review process can be applied.

**Ofcom: making international comparisons work**

In assessing the relative performance of BT, Ofcom faces the problem of no obvious comparator.<sup>8</sup> One possible solution would be to use historical trends of BT, but, this would not reveal what performance could be, only what it has been. Ofcom has therefore elected to use international comparators and benchmark BT against the performance of the US local exchange carriers (LECs), which are often regarded as operating at global best practice. There are issues relating to the degree of comparability between BT and the LECs,

possibly influencing the amount of weight that Ofcom can place on the comparison. However, these problems have been mitigated with a data-collection programme, refined over several years, and various adjustments to ensure that only like-for-like comparisons are made (such as removing 999/911 calls since these are treated differently in the USA, and removing data network costs from BT's cost base as they are not included in the cost base of the LECs). A variety of techniques have been applied to ensure a consistent and robust assessment of BT's performance relative to that of the LECs.

**Conclusion**

Yardstick competition has faced serious challenges and many commentators have questioned its ongoing use, particularly in industries in which the 'easy' cost savings have already been made.

Whether the costs, including the risk of an incorrect assessment, outweigh the benefits from lower prices and improved quality needs to be examined on a case-by-case basis. However, there are some factors that influence the amount of weight a regulator can place on yardstick comparison, as shown in the box below.

Regulators have seen their initial frameworks challenged and have faced practical challenges to make yardstick competition work effectively. However, they can learn from the experiences of each other, and, when there is an opportunity for comparative assessment to be undertaken, apply methods suitable for the problem in hand.

<b>Factors affecting the weight regulators can place on yardstick regulation</b>	
<b>Factor</b>	<b>Effect on regulator's assessment</b>
<b>Low number of comparators</b>	<b>Less weight on analysis, consider alternatives</b>
<b>Similarity of comparators</b>	<b>More confidence and weight on analysis</b>
<b>Lower level of disaggregation</b>	<b>More accurate analysis, more confidence in analysis</b>
<b>Period since privatisation</b>	<b>Unclear effect on assessment</b>
<b>Amount of noise in the data</b>	<b>Less confidence in potential savings</b>
<b>Convergence in performance at the frontier</b>	<b>Less need for yardstick competition</b>
<b>Changing operating conditions</b>	<b>More need for yardstick competition</b>

<sup>1</sup> Schumpeter, J.A. (1950) *Capitalism, Socialism, and Democracy*, 3rd edition, New York: Harper & Brothers.  
<sup>2</sup> See, for example, Competition Commission (2002), 'Vivendi Water UK PLC and First Aqua (JVCo) Limited: A Report on the Proposed Merger', November.  
<sup>3</sup> Water UK is the industry association that represents all UK water and waste-water service suppliers at a national and European level.  
<sup>4</sup> Ofgem (2004), 'Electricity Distribution Price Control Review: Summary of Responses to June 2004 Initial Proposals' September.  
<sup>5</sup> See Competition Commission (2002), op. cit., p. 127.  
<sup>6</sup> Competition Commission (2002), op. cit.; and Oxera (2005), 'Water Mergers: What are the Prospects?', *Agenda*, May, available at www.oxera.com.  
<sup>7</sup> Ofgem (2005), 'Assessment of the Electricity Distribution Price Control Review Process: Conclusions', July.  
<sup>8</sup> Ofcom (2005), 'Review of BT's Network Charge Controls: Consultation Document', Annex 8, March 23rd.

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