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REGULATING QUALITY IN PUBLIC UTILITIES

Price regulation was introduced for certain utilities because they are “natural monopolies”, whose behaviour is not constrained by market competition. But price is not the only factor that interests consumers. The need to set appropriate quality standards raises an even more complex set of issues, with which company regulators continue to wrestle. Recently, Frontier analysed some of these issues for the National Audit Office. This bulletin highlights some of the recent thinking on quality regulation.

Price is only one factor that guides our choice between competing products. When we buy a car, we want to know how expensive it will be to run, how comfortable it will be to drive, how reliable it will be on the road – in short, we assess its quality in various ways whose importance reflects personal preferences.

While the goods provided by regulated utilities are usually less sophisticated, there are →

clearly still aspects of quality that concern us. How often will my electricity supplier cut me off? How late are the trains that take me to work, and how often are they late? How good does the water from my tap taste? If consumers had a choice of these services in a competitive marketplace, they would be able to select the combination of price and quality that best suited their personal preferences. But they cannot “vote with their feet” against a monopoly supplier. It therefore falls to the regulator to ensure the customer is well-served, not only in terms of price but also in terms of quality.

PINNING DOWN THE PROBLEMS

The regulation of quality is not, however, straightforward. To begin with, it is not easy to identify the most appropriate indicators. What aspects of quality concern customers most?

Secondly, customers’ perceptions of quality vary, but in network industries, it may be physically impossible to deliver different price and quality mixes to different customers. It is not easy to determine the “right” level of quality when it has to be uniform for all customers.

Thirdly, quality is not easy to measure. If average train delays increase from 10 minutes to 15 minutes, has the quality of service deteriorated by 50%? There is also the question of whether quality should be measured in absolute terms, or by comparison between service providers.

But the most difficult sets of decisions arise from the trade-off between cost and quality. To raise the quality of their product or service, companies may need to spend more on maintenance or undertake targeted investment programmes. Since regulators provide companies with strong incentives to cut costs, there will always be a temptation to make savings not by improving efficiency, but by simply cutting back on quality. The regulator’s problem is exacerbated by the fact that it is not easy to tell precisely how much it will cost either to deliver a given quality standard, or to raise this to a higher level.

It may not be easy for the regulator to spot when a regulated company is cutting corners, since quality of supply is not something that changes overnight. If a company begins to cut back on maintenance and new investment, it will take a while (potentially many years) for problems to begin to emerge.

Moreover, the causes of variation in quality are not easy to pin down. If, for example, an electricity distributor has a high level of outages, is this because the company has been under-investing? Or is it simply the result of bad weather?

Designing, calibrating and monitoring incentive mechanisms therefore requires a great deal of care. In its work for the National Audit Office, Frontier has focused on three particular types of problem in quality regulation – overcoming short-termism, deciding between absolute and relative quality measures, and setting the balance between centralised and local standard-setting.

THE LONG VIEW

Regulators’ concerns over quality often reflect a concern that the network owners will take a short-term view. Capital and maintenance expenditure might be reduced or delayed (to obtain benefits in the current regulatory period), reducing the future safety or quality of performance of the network.

The same trade-offs however arise in other industries. Airlines face the choice between investing in maintenance or accepting a shorter working life for their aircraft and a greater level of operational risk. So why are regulated network businesses assumed to be different?

Airlines face uncertainty about the value of the pay-off (or penalty) from investment (or

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inaction). Regulated utilities, however, face uncertainty as to whether there will be a pay-off or a penalty at all. A company that allows its network to deteriorate may hope to appeal to the regulator in the future for additional cash to bail it out -particularly since safety or quality concerns will be matters of public concern. This hope of bail-out would be reinforced if the company believed that the regulator would not allow the network owners to go bankrupt (or even be obliged to sell the business at a distress price). Equally, a network business considering investment designed to deliver long-term improvements in the quality of service may have doubts about the regulator's commitment to reward such actions in the future. Indeed, the regulator may have to buck public opinion to honour such commitment, since that very improvement in quality or safety may have diminished public interest in quality or safety, and thus made customers more resistant to increases in price.

Companies need to be confident that the long-term value of their business will increase if quality and safety are improved. Regulated utilities will then be more inclined to analyse the trade-off in the same way that a company would in a competitive market. However, there still remains the vexed question: what level of quality is appropriate? Designing a system that encourages companies to gold-plate their networks, and expect to be paid for this, may not suit their customers either. We want a system that allows companies' value to increase for just so long as we think customers value the incremental improvements in quality.

ABSOLUTE OR RELATIVE?

A scheme that sets absolute (i.e., common) quality standards suffers from the disadvantage that it may provide no stimulus to improvement by the better-performing companies, or even encourage them to lower their standards. Hence the development of comparative regimes. Just as competition can provide strong incentives for cost reduction, so a "yardstick incentive" regime can introduce powerful incentives for companies to improve their quality of service. However, given the uncertainties about the costs and value of quality, such schemes may also lead to perverse outcomes.

Suppose, for example, that there are two regulated firms and that a single "prize" is given to the one with the highest quality. The two firms are therefore in a race: it does not matter to a firm how high the quality level is, only that it is a bit higher than its rival's.

It seems reasonable to assume that the marginal cost of quality increases: ie, the higher the existing standard, the harder (more expensive) it is to raise it further. There is a considerable academic literature on the effect such "races", mostly relating to patent awards for new inventions. Two conclusions from this literature are that:

- firms may make too much effort (ie, increase quality more than necessary) to win in a race in which they start from the same point, because each believes it may need make only a little more effort to win the whole prize; and
- firms may make too little effort (ie, there is virtually no increase in quality) if the starting points differ, because the challenge looks too great to those least likely to win, so that they simply opt out of the race.

Relative payment schemes therefore require careful design, since behaviour under such regimes is highly sensitive to that design.

CENTRALISED OR DE-CENTRALISED REGIMES?

The difference between these two types of regime lies in the degree of real choice left to the regulated company. Under a centralised system, the regulator targets a particular level of quality (which may be the prevailing level of quality) and imposes punitive penalties for diminishing quality below this level. It offers only relatively modest rewards for improvements above this level. The central point is determined in line with the regulator's estimates of the public's willingness to pay for quality.

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Within a de-centralised regime, the regulator sets payments and penalties relative to some target level, but in a way that leaves it much more open to the firm to choose its own outcome. Penalties may not be so punitive (or bonuses so modest) that the regulated company has no effective choice but to conform to the central standard chosen by the regulator. The firm will choose to supply the quality of service at a level at which the marginal costs of improving it match the marginal incentives to do so. Under such a regime it is possible that a firm persistently makes penalty payments, but it is content to do so because the costs of improving quality would be even higher than the payments. This approach de-centralises the choice of quality provision to the firm.

The choice of system depends on the overall regulatory framework and the nature of the industry. If the regulator does not take a particular view on the appropriate level of quality, then it may be appropriate to adopt a de-centralised regime and let the firm decide the level of quality. On the other hand, if quality provision is a very sensitive issue, then a regulator may prefer to lock in a certain level of quality provision through a centralised system.

A centralised system may also be appropriate if the regulatory regime is very high powered. Such a regime is likely to provide very strong incentives to cut costs, and a centralised quality system may be necessary to ensure that quality does not take the strain.

CURRENT PRACTICE

The need to regulate quality appears to be well understood by many regulators. In the UK for example, OFGEM has developed its Incentives and Information Program (IIP) to expose companies to financial penalties and rewards that are linked to the reliability of their service. It is expected that this regime will be more formally integrated into the price control regime at the next price review.

In the water industry, Ofwat made an adjustment to prices at the last price review to reflect the overall standard of service provided to customers, which varied between -0.5% and +0.5%. In the rail sector, Railtrack and the train operating companies have been exposed to a myriad of quality incentives.

However, the rail sector provides a painfully high-profile illustration both of how difficult it can be to design an effective system of regulation for quality, and how important it is that the quality regime sits within a coherent regulatory framework of price controls and subsidy provision. If the overall incentive regime is incoherent or contradictory, the results may be highly damaging for some or even all of the major stakeholders.



Frontier's report for the NAO, covering these issues and other topical issues in company regulation, forms an annex to the NAO's "Pipes and Wires" report, published in April 2002. It can be downloaded from the NAO's web-site at www.nao.gov.uk.

This bulletin reflects Frontier's own conclusions and should not be taken as an indication of the views of the National Audit Office.

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