

# Agenda

## Advancing economics in business

### Menu regulation: is it here to stay?

**Menu regulation is an innovative system in which companies are presented with a choice of regulatory contracts. Within its current methodology consultation, Ofwat, the England & Wales water regulator, is considering the introduction of menu regulation in the sector, meaning that there will be three sectors in the UK in which it will be applied: water, gas distribution and electricity distribution. What are the challenges of this new regulatory approach?**

Menu regulation is a relatively recent addition to the regulatory toolkit. To date, there are few practical applications of menu regulation internationally, and the UK is a clear front-runner.<sup>1</sup> Therefore, an examination of the UK cases is helpful in assessing the potential of applying menu regulation in other countries or sectors.

Another feature of the study of menu regulation is that it can be easily linked back to its theoretical roots, which can be useful in understanding how the menu works and identifying some of its implementation challenges.

#### Theoretical background

Regulators across a range of infrastructure sectors face a trade-off between two conflicting goals:

- incentivising productive efficiency; and
- setting cost-reflective tariffs.

If the regulated company has scope for cost reductions, it may be worthwhile for the regulator to place more

emphasis on the productive efficiency goal. On the other hand, if the company is already producing at the lowest possible costs, it is more useful from the regulator's perspective to concentrate on the cost-reflective tariff goal. However, in the context of information asymmetry, how does the regulator know whether the company has scope for cost reductions?

Inspired by a set of theoretical economic models (see the box below), the menu approach may allow the regulator to detect, with a minimum level of regulatory burden, which companies should be regulated with a contract that places more weight on incentivising efficiency, and which should be regulated with a contract that concentrates on the cost-reflective tariff goal.

#### How does the menu work?

The practical applications of the menu focus on achieving the following two main objectives.

#### Models of menu regulation

Laffont and Tirole show that regulators can determine the optimum regulatory contract by offering companies a menu of contracts with different cost-sharing provisions. If the menu is well designed, companies with more scope for cost reductions will automatically choose a contract with more powerful incentives than companies with less scope (ie, contracts are tailored to the company's inherent cost opportunities, which are not observable by the regulator).

The simplest Laffont and Tirole model assumes that there are two types of company (high-cost and low-cost). The model shows that an optimum regulatory system can be obtained by offering the regulated company a choice between two contracts. One is a fixed-price contract that

leaves some rent if the company is a low-cost type, but negative rent if it is a high-cost type (high-power scheme). The other is a cost-contingent contract that allows the company to make less effort but leaves no rent (low-powered scheme). Low-cost companies are better off opting for the high-powered scheme (and providing the optimal level of effort), while high-cost companies are attracted by the low-powered scheme (providing less effort).

The practical menu approach adopted in the UK is based on an alternative version of this model, which shows that the same conditions apply when companies are offered a menu of continuum contracts.

Source: Laffont, J-J. and Tirole, J. (1993), *A Theory of Incentives in Regulation and Procurement*, Cambridge, MA: MIT Press.

This article is based on the Oxera report 'Assessing Approaches to Expenditure and Incentives', prepared for Ofwat, October 2007. Available at [www.oxera.com](http://www.oxera.com).

- **Reducing the regulatory burden.** As explained above, the menu automatically identifies companies with more or less scope for cost reductions. Therefore, there may be less need for cumbersome methodologies to determine this potential for cost reduction.
- **Increasing the accuracy of companies' business plans.** The menu incentivises the submission of accurate business plans. This in turn increases companies' accountability and ownership of their business plans, thereby increasing the transparency of the regulatory system.

The menu of possible regulatory contracts that Ofwat is proposing to offer the water companies is illustrated in Figure 1.<sup>2</sup> Each column of the table represents a different contract with different incentive power. The further to the left in the table, the greater the power of the incentives of the regulatory contract. The menu works by incentivising companies to choose the contract (ie, submit a business plan) that best reflects their true expected costs for the next regulatory period. As a result of this, companies that have more potential for cost reductions are regulated with a higher-incentive contract (ie, they choose the contracts to the left-hand side of the table). Companies that do not have this potential are regulated with a lower-incentive contract (ie, they select contracts to the right-hand side of the table).

There are seven basic components that interact to give shape to the menu.<sup>3</sup>

- The **baseline** represents the regulator's view of a company's expenditure requirement. It plays a key role within the menu system. All figures (except the efficiency incentive rate) in Figure 1 are expressed as ratios to the baseline.

- The **business plan** (row 1) contains the projected expenditure from the point of view of the company. One of the key characteristics of the menu is that companies are incentivised to submit business plans that represent their true expected expenditure requirements.
- The **efficiency incentive rate** (row 2) is the rate at which companies' outperformance or underperformance in terms of their allowed expenditure is rewarded or penalised. The efficiency incentive rate should decrease as the business plan increases. This guarantees that companies with greater potential for cost reductions (ie, lower business plans) are regulated with a higher-incentive contract.
- The regulator compares **allowed expenditure** (row 3) with actual expenditure in order to calculate companies' rewards.
- The **additional income** (row 4) is an adjustment factor, either positive or negative, used to ensure that the companies submit a business plan that reflects their true potential cost reductions.
- **Actual expenditure** (column 1) refers to the outturn costs incurred by companies.
- The **total reward** (columns 2–6) is the amount that companies would earn beyond their economic costs. The total reward depends on the other components of the menu, and is calculated as follows:

$$\text{total reward} = (\text{allowed} - \text{actual expenditure}) \times \text{efficiency rate} + \text{additional income}$$

The components of the menu need to be calibrated by the regulator such that companies are incentivised to choose their 'true' business plan.

This incentive is guaranteed when companies achieve the greatest possible total reward by selecting a business plan that is equal to the expected expenditure.

For example, a company choosing a business plan of 95 (column 3) that spends 95, obtains a total reward of 1.56. This amount is obtained applying the total reward formula presented above:

$$1.56 = (98.7 - 95) \times 32.5\% + 0.34.$$

If the company chooses a higher business plan (eg, 105), the total reward would be slightly lower:

$$1.31 = (101.2 - 95) \times 27.5\% - 0.41.$$

**Figure 1 Ofwat's proposed menu table for the forthcoming periodic review of water charges**

Business plan	90	95	100	105	110
Efficiency incentive (%)	35.0	32.5	30.0	27.5	25.0
Allowed expenditure	97.5	98.7	100.0	101.2	102.5
Additional income	0.62	0.34	0.00	-0.41	-0.88
Actual expenditure					
		<b>Total reward</b>			
90	3.25	3.19	3.00	2.69	2.25
95	1.50	1.56	1.50	1.31	1.00
100	-0.25	-0.06	0.00	-0.06	-0.25
105	-2.00	-1.69	-1.50	-1.44	-1.50
110	-3.75	-3.31	-3.00	-2.81	-2.75

Source: Based on Oxera (2007), op. cit.

Similarly, if the company were to choose a lower business plan (eg, 90), the total reward would also be lower:  $1.50 = (97.5 - 95) \times 35.0\% + 0.62$ .

The greatest possible total reward for each level of actual expenditure has been highlighted in the menu table in Figure 1. The fact that the actual expenditure and the business plan are equal throughout the highlighted diagonal implies that the water menu does incentivise companies to select their true business plan from the options presented.

The menu should also maintain the efficiency incentive. For example, if the company choosing the 95 business plan spent 100, it would obtain a total reward of  $-0.06$  rather than 1.56. The fact that the total reward decreases with the level of actual expenditure implies that the water menu does incentivise companies to spend efficiently.

## Some implementation challenges

### Setting the baseline

Setting the baseline expenditure is one of the most important decisions in implementing a menu. This is because the level of rewards that companies receive depends on the level of the baseline. The higher the baseline, the more likely the company is to choose a higher-incentive contract and receive a greater reward.

The following options can be considered in determining the baseline expenditure.

- **Bottom-up engineering models.** This is the approach taken by Ofgem for the electricity and gas menus,<sup>4</sup> although it has not been proposed for the water menu.
- **Top-down econometric models.** Ofwat currently uses econometric models to assess part of the water companies' capital expenditure. Potentially, these models could also be used to set the baseline of the menu. However, in order to simplify the system, Ofwat has proposed to rule out this methodology.<sup>5</sup>
- **Average historical expenditure.** This method, combined with some cost base and Common Framework challenge, is proposed by Ofwat to set the capital maintenance expenditure baseline. It scores well in terms of achieving the two main objectives of the menu system described above, although the 'cost base' ingredient might still impose a significant regulatory burden.
- **Forecasts provided by companies in their first business plans.** This method, combined with some comparative cost base challenge and a system of balanced scorecards, is proposed by Ofwat to set the

capital enhancement expenditure baseline. One of the challenges of this methodology is how to avoid the incentive that companies might still have to inflate the first business plan submissions.

### Financeability issues

In any regulatory system, the allowed revenues should cover the economic costs of providing the service. However, even in cases in which revenues cover costs, companies might still face some financeability constraints. An important feature of previous periodic reviews has been the testing for financeability constraints, with revenue adjustments introduced in cases where the scale of expenditure was deemed to be sufficiently high to jeopardise companies' ability to raise finance.<sup>6</sup> Under the menu system, the profile of revenues within the regulatory period is not automatically set. Therefore, regulators are free to adjust this profile to tackle financeability issues by using similar tests. In doing so, there is the question of whether they should assume that companies will spend the allowed expenditure or the business plan expenditure.

Testing for financeability assuming that allowed expenditure is spent might under- or overestimate potential financeability problems. For example, the financeability test using allowed expenditure for a company choosing the business plan of 110 (the final column of Figure 1) will assume that the company needs to spend 102.5, when in fact the actual expenditure will be 110. Therefore, potential financeability problems will be underestimated. Similarly, the financeability test for a company choosing the business plan of 90 (column 1) will assume that the company needs to spend 97.5, when the actual expenditure will be only 90. This implies that any potential financeability problem will be overestimated.

Testing for financeability assuming the business plan expenditure might undermine the incentive-compatible feature of the menu system by introducing an incentive to submit higher business plans. If the companies know in advance that regulators will assume the business plan expenditure in their tests, they might attempt to submit inflated business plans in order to obtain a financeability uplift.

### Which expenditure?

The menu system could potentially be applied to any type of expenditure. However, in the three existing case studies, the regulators have preferred to apply the menu to capital expenditure only, while operating expenditure continues to be assessed under the traditional RPI – X incentive mechanism.

To consider this issue, it is useful to recall that one of the principal objectives of the menu is to encourage business plans that best reflect companies' expectations. This suggests that the greater the amount of uncertainty on the part of the regulator regarding the appropriate level of costs, the more useful the menu approach is likely to be. If the range of outcomes for costs can be predicted with a reasonably high degree of confidence, there is likely to be less value associated with encouraging the company's underlying views to be fully reflected in the business plan.

## Concluding comments

Reviewing the theory and practical case studies of menu regulation is useful in developing an understanding of how this innovative methodology might be applied in other sectors or countries. But is the menu here to stay? Given that experience is still limited, evidence on the outcomes of the menu system is not yet fully available, so this question may not be answered with certainty for at least some years. Meanwhile, the discussion will focus on the risks and challenges of implementation.

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<sup>1</sup> See Joskow, P. L. (2007), 'Regulation of Natural Monopolies', in M. Polinsky and S. Shavell (eds) (2007), *Handbook of Law and Economics*, North Holland.

<sup>2</sup> Ofwat (2007), 'Menu Regulation Proposals for PR09: Consultation Paper', October. The menu system in the water sector is based on the schemes previously designed by Ofgem for electricity distribution and gas distribution. For a discussion on these cases, see Ofgem (2004), 'Distribution Price Control Review: Final Proposals', November, and Ofgem (2007), 'Gas Distribution Price Control Review: Final Proposals', December.

<sup>3</sup> These components are described in more detail in Oxera (2007), *op. cit.*

<sup>4</sup> Ofgem (2004), *op. cit.*, and Ofgem (2007), *op. cit.*

<sup>5</sup> Ofwat (2007), *op. cit.*

<sup>6</sup> Ofwat and Ofgem (2006), 'Financing Networks: A Discussion Paper', February.

If you have any questions regarding the issues raised in this article, please contact the editor, Derek Holt: tel +44 (0) 1865 253 000 or email [d\\_holt@oxera.com](mailto:d_holt@oxera.com)

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