

Agenda—10 years

Advancing economics in business

Menu regulation: is it here to stay?

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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.¹ 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 overleaf), 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.

Since this article was written, Ofgem (the energy regulator for Great Britain), which first introduced menu regulation in the UK, has continued to apply this type of regulation in the form of its Information Quality Incentive (IQI). Ofgem has moved from applying the IQI to capital expenditure (CAPEX) only to using a total expenditure (TOTEX) menu (i.e. one that also includes operating expenditure, or OPEX). It has also applied the IQI alongside other incentives introduced since 2010 as part of the RIIO (Revenue = Incentives + Innovation + Outputs) approach, including stakeholder engagement, a focus on outputs, and 'fast-tracking' of well-justified business plans. Similarly, in its 2014 price review, Ofwat has applied menu regulation on a TOTEX basis, combined with a focus on customer engagement, outcomes, and offering the prospect of early determinations for companies qualifying for 'enhanced' status.

Taken as a package, these approaches might be regarded as being designed to encourage 'information revelation'—of which menu regulation is an important part. However, not all regulators have adopted menu regulation, with a number relying instead on other approaches in the toolkit, such as the Customer Forum in the Scottish water sector, and constructive engagement in UK airports.

How does the menu work?

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

- **Reducing the regulatory burden.** As explained above, the menu automatically identifies companies with more

In theory, menu regulation is aimed at addressing two informational asymmetries that regulators face:

- firms' inherent cost opportunities; and
- the cost of managerial effort.

By offering firms a 'menu' of regulatory contracts with different cost-sharing provisions, the regulator could, in principle, make it profitable for a firm with low-cost opportunities to choose a relatively high-powered incentive scheme, and a firm with high-cost opportunities to choose a relatively low-powered incentive scheme. In practice, regulators—including Ofwat and Ofgem—use menu regulation as a 'truth-revelation' mechanism to incentivise companies to put forward robust forecasts of their expenditure requirements.

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 (i.e. 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.

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 1.² 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 (i.e. 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 (i.e. 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 (i.e. they select contracts to the right-hand side of the table).

There are seven basic components that interact to give shape to the menu.³

- 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

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	Total reward				
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.

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 (i.e. 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 (e.g. 105), the total reward would be slightly lower: $1.31 = (101.2 - 95) \times 27.5\% - 0.41$. Similarly, if the company were to choose a lower business plan (e.g. 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,⁴ 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.⁵
- **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.⁶ 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,

In the 2005–10 electricity distribution price control review (DPCR4),¹ in which a 'sliding scale mechanism' was introduced, and the 2008–13 gas distribution price control review (GDPCR),² in which the IQI was introduced, menu regulation applied only to CAPEX. Ofgem subsequently adopted a TOTEX approach in the 2010–15 electricity distribution price control review (DPCR5).³ Its commitment to the IQI was subsequently set out in the 2010 RIIO Handbook, in which it states that:

we will use the IQI in all four energy network sectors to provide financial incentives to encourage companies to submit more accurate expenditure forecasts than they would in the absence of the IQI.

Ofgem also noted that:

The use of the IQI is consistent with the option to fast-track a network company during the price control review process if the network company provides a sufficiently well-justified business plan.⁴

In subsequent energy network price controls, therefore, Ofgem applied the IQI on a TOTEX basis, and combined this with fast-track menu incentives. In RIIO-GD1 (2013–21), the regulator decided not to fast-track any of the gas distribution networks.⁵ In RIIO-T1 (2013–21), two companies were fast-tracked (Scottish Power Transmission Limited and Scottish Hydro Electric Transmission plc), and benefited from a higher incentive rate than the slow-tracked companies.⁶ In RIIO-ED1 (2015–23), the four electricity distribution network operators owned by Western Power Distribution were fast-tracked, and benefited from additional upfront revenue of 2.5% plus a higher incentive rate than the slow-tracked companies.⁷ The top-performing slow-tracked companies were also rewarded through the IQI for providing information that aided Ofgem's comparative benchmarking.⁸

In the water sector, while Ofwat had, in its 2010–15 review (PR09), applied a menu to CAPEX only (in the form of the Capital Incentive Scheme, CIS),⁹ this was extended to TOTEX in the 2015–20 review (PR14). As part of this, the two 'enhanced' companies (Affinity Water and South West Water) received a higher incentive rate than 'standard' companies.¹⁰ Rewards were also provided to the top-performing companies (both enhanced and standard).¹¹

¹ Ofgem (2004), 'Electricity Distribution Price Control Review: Final Proposals', November.

² Ofgem (2007), 'Gas Distribution Price Control Review: Final Proposals', December.

³ Ofgem (2009), 'Electricity Distribution Price Control Review: Final Proposals', December.

⁴ Ofgem (2010), 'Handbook for implementing the RIIO model', October, paras 8.46 and 8.54.

⁵ Ofgem (2012), 'RIIO-GD1: Final Proposals – overview', December.

⁶ See Ofgem (2012), 'RIIO-T1: Final Proposals for SP Transmission Ltd and Scottish Hydro Electric Transmission Ltd – overview', April; and Ofgem (2012), 'RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas – overview', December.

⁷ See Ofgem (2013), 'Strategy decision for the RIIO-ED1 electricity distribution price control. Outputs, incentives and innovation. Supplementary annex to RIIO-ED1 overview paper', March; and Ofgem (2013), 'RIIO-ED1: Draft Determination for Western Power Distribution Ltd', November.

⁸ Ofgem (2014), 'RIIO-ED1: Final determinations for the slow-track electricity distribution companies – Overview. Final decision', November.

⁹ Ofwat (2009), 'Future water and sewerage charges 2010-15: Final determinations', November.

¹⁰ Ofwat (2014), 'Final price control determination notice: policy chapter A3 – wholesale water and wastewater cost and revenues', December.

¹¹ See the 'implied menu choice' of the relevant company-specific appendix on Ofwat's website (<https://www.ofwat.gov.uk/pricereview/pr14/finaldet/>), as compared with Ofwat's final menu tables set out in Ofwat (2014), 'Final price control determination notice: policy chapter A3 – wholesale water and wastewater cost and revenues', December.

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.

At this stage, Ofgem and Ofwat appear to be fairly committed to using menu regulation as an information-revelation mechanism, although this may not always be the case. As noted by Ofgem in the 2010 RIIO Handbook:

The use of the IQI will be subject to review in future price control periods. The incremental benefit of using the IQI depends on the contribution that the other tools in the assessment tool-kit can make. For instance, as companies become experienced in developing well-justified long-term business plans, and as we become experienced in assessing those plans, the incremental benefits of the IQI may reduce. At some point in the future, we may decide that the potential benefits of the IQI are not sufficient to justify the additional complexity and administrative burden that it brings.¹

Time, as they say, will tell...

¹ Ofgem (2010), 'Handbook for implementing the RIIO model', October, para. 8.47.

This article is based on the Oxera report 'Assessing Approaches to Expenditure and Incentives', prepared for Ofwat, October 2007, available at: <http://www.oxera.com/Latest-Thinking/Publications/Reports/2007/Assessing-approaches-to-expenditure-and-incentives.aspx>.

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

² 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.

³ These components are described in more detail in Oxera (2007), 'Assessing Approaches to Expenditure and Incentives', prepared for Ofwat, October, available at: <http://www.oxera.com/Latest-Thinking/Publications/Reports/2007/Assessing-approaches-to-expenditure-and-incentives.aspx>.

⁴ Ofgem (2004), 'Distribution Price Control Review: Final Proposals', November; and Ofgem (2007), 'Gas Distribution Price Control Review: Final Proposals', December.

⁵ Ofwat (2007), 'Menu Regulation Proposals for PR09: Consultation Paper', October.

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