

Estimating the cost of improving service quality in water supply: A shadow price approach for England and Wales

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Abstract

Service quality to customers is an aspect that cannot be ignored in the performance assessment of water companies. Nowadays water regulators introduce awards or penalties to incentivize companies to improve service quality to customers when setting prices. In this study, the directional distance function is employed to estimate the shadow prices of variables indicating the lack of service quality to customers in the water industry i.e., written complaints, unplanned interruptions and properties below the reference level. To calculate the shadow price of each undesirable output for each water company, it is needed to ascribe a reference price for the desirable output which is the volume of water delivered. An empirical application is carried out for water companies in England and Wales. Hence, the shadow price of each undesirable output is expressed both as a percentage of the price of the desirable output and in pence per cubic meter of water delivered. The estimated results indicate that on average, each additional written complaint that needs to be dealt with by the water company includes a service quality cost of 0.399p/m³. As expected, when looking at the other service quality variables which involve network repair or replacement, these values are considerably higher. On average, the water company must spend an extra 0.622p/m³ to prevent one unplanned interruption and 0.702p/m³ to avoid one water pressure below the reference level. The findings of this study are of great importance for regulated companies and regulators as it has been illustrated that improvements in the service quality in terms of customer service could be challenging and therefore ongoing investments will be required to address these issues..

Keywords

Water supply, Directional distance function, Shadow price, Service quality, Sustainability, Urban water cycle.