Institution: Aston University

Unit of Assessment: 19 Business and Management Studies

Title of case study: Influencing the Regulation of the Water and Sewage Industry and the 2013 Water Bill

1. Summary of the impact (indicative maximum 100 words)

Research conducted at Aston University on the performance of the water and sewerage industry influenced water industry regulation and the shaping of the Water Bill 2013-14, which had its first reading in the House of Commons on 27 June 2013. Specifically, the research: changed understanding and awareness in the debate preceding the Water Bill by highlighting potential costs associated with vertically separating water companies (**Impact 1**); influenced the Water Bill's prohibition of mandatory company separation, while also providing evidence that facilitated the Bill's provisions to establish a Great Britain wide retail market for non-household water customers (**Impact 2**); and changed policy makers' awareness of panel cost and productivity assessment methods, thereby influencing consideration of their future application to regulatory cost assessment (**Impact 3**) .

2. Underpinning research (indicative maximum 500 words)

English and Welsh water and sewage services are provided by vertically integrated monopolies, with regulated prices that are set by the Water Services Regulation Authority (Ofwat) after it assesses a firm's cost improvement potential. While this regulatory model has worked well to deliver productivity and service improvements, Ofwat and the Department for Environment, Food and Rural Affairs (DEFRA) began to question whether it would deliver future performance improvements. Thus, Ofwat started to consider how vertical separation might foster competition, as well as changes to the cost assessment methods to be employed in its 2014 price review. Similarly, the 2009 Independent Review of Competition and Innovation in Water Markets for DEFRA (Ref 5.2) set the agenda of the reform debate culminating in the Water Bill 2013-14 that was introduced in the House of Commons on 27 June 2013. However, while the Water Bill contains provisions to foster retail competition, it does not mandate and only allows for the vertical separation of upstream production within a single licensed entity, which is in contrast to the more radical mandatory legal vertical separation that has been employed in the electricity industry to foster competition.

Research conducted at Aston by Dr. David Saal (Senior Lecturer) (1999-still in post) and Professor David Parker (1999-2003) has both informed regulators with regard to alternative performance assessment techniques and contributed the methodologies and results necessary to understand the potential costs of imposing vertical separation on a regulated industry.

Thus, Reference 3.1 and 3.2 (Saal & Parker; 2000 & 2001) demonstrated the applicability of panel based productivity growth and cost function approaches to measuring water utility performance at company level. Reference 3.3 (Saal et al; 2007) further demonstrated the applicability of techniques which decompose company level productivity growth into technical change, efficiency change and scale change. All three papers introduced widely cited techniques to control for differences in water quality and operating characteristics, necessary to properly assess differences in costs between companies.

Reference 3.1 also provided a total cost modelling approach necessary for an initial assessment of cost savings from vertical integration of water and sewerage services in the UK water industry, as well as the potential impact of quality on measured scope economies. Reference 3.4 (Ballance, Reid, and Saal; 2004) reports research that was funded by Ofwat, with the specific aim of extending the analysis of Reference 3.1, so as to provide a comprehensive assessment of scale and scope economies in the UK water industry. Amongst other findings, the report suggested strong evidence for the cost benefits of vertically integrating water supply activities.

Reference 3.5 (Arocena, et al; 2012) firstly, found evidence of significant vertical scope economies

in the US electricity industry, suggesting that policy makers must carefully assess the costs of vertical separation against any potential benefits that might be gained by separating network activities from potentially competitive activities. The paper also demonstrated a new methodology allowing for monetary estimates of the costs of vertical separation, which was subsequently applied by Dr. Saal in a Severn Trent funded project (Ref 5.3) of the costs of vertical separation in the UK water industry. Finally, Reference 3.6 (Saal, et al; 2013) is the first journal publication from the Severn Trent Water funded research and provides a comprehensive international review of the literature, thereby demonstrating that the preponderance of evidence suggests substantial cost savings associated with the vertical integration of water supply.

3. References to the research (indicative maximum of six references)

3.1 Saal, D.S. and D. Parker (2000) "The Impact of Privatisation and Regulation on the Water and Sewerage Industry in England and Wales: A Translog Cost Function Approach" *Managerial and Decision Economics* 21(6) pp. 253-68. DOI: 10.1002/mde.988

Managerial and Decision Economics is a recognized peer reviewed journal. Citations by July 31st 2013: Google Scholar 155 .

3.2 D.S. Saal and D. Parker (2001) "Productivity and Price Performance in the Privatized Water and Sewerage companies of England and Wales", *Journal of Regulatory Economics* 20(1) pp. 61–90. DOI: 10.1023/A:1011162214995

The ***Journal of Regulatory Economics*** is ranked 151th of 321 economics journals in ISI Web of Knowledge. Citations by 31st July 2013: Web of Science 31, Google Scholar 194.

3.3 D.S. Saal, T. Weyman-Jones and D. Parker (2007) Determining the Contribution of Technical, Efficiency, and Scale Change to Productivity Growth in the Privatized English and Welsh Water and Sewerage Industry: 1985-2000 Journal of Productivity Analysis 28(1-2) pp. 127-139. DOI: 10.1007/s11123-007-0040-z.

The **Journal of Productivity Analysis** is ranked 144th of 321 economics journals in ISI Web of Knowledge. Citations by 31st July 2013: Web of Science 36, Google Scholar 103

3.4 Ballance, A., Reid, S., & Saal, D. (2004). Investigation into evidence for economies of scale in the water and sewerage industry in England and Wales. Official Report prepared for the Office of Water Services by Stone & Webster Consultants, London. (http://www.ofwat.gov.uk/pricereview/pr04/rpt_com_econofscale.pdf)

Reference 3.4 was an official report for Ofwat. Its continuing academic relevance is also demonstrated by at least 17 citations (since 2009) in internationally recognised journals such as the *Journal of Economic Behaviour and Organization* (2013), the *International Journal of Production Economics* (2011), and the *Journal of Regulatory Economics* (2010).

3.5 P. Arocena, D.S. Saal, & T. Coelli (2012) "Vertical and Horizontal Scope Economies in the Regulated US Electricity Power Industry", *Journal of Industrial Economics* 60(3) pp 434-66. DOI: 10.1111/j.1467-6451.2012.00486.x (first published as ABS Working Paper RP0917 in June 2009)

This ***Journal of Industrial Economics*** is ranked 116th of 321 economics journals in ISI Web of Knowledge, and is the most prestigious journal for Industrial Organisation.

3.6 D.S. Saal, P. Arocena, A. Maziotis, A., & T. Triebs (2013) "Scale and Scope Economies and the Efficient Vertical and Horizontal Configuration of the Water Industry: A Survey of the Literature" *Review of Network Economics* 12(1): 93–129. *DOI 10.1515/rne-2012-0004*.

The ***Review of Network Economics*** is ranked 115th of 321 economics journals indexed in ISI

Web of Knowledge.

4. Details of the impact (indicative maximum 750 words)

The overall significance of Aston's research to water industry reforms is demonstrated by Dr. Saal's inclusion in Ofwat's Future Challenges advisory panel, which met in 2011-12 and brought together water industry experts to help develop Ofwat's reform proposals. (http://web.archive.org/web/20130411201350/http://ofwat.gov.uk/future/advisory/prs_web_10advisorybio#S)
More specifically, the research impacted the shaping of water industry reforms culminating in the Water Bill 2013-14. It therefore benefited policy makers at Ofwat, DEFRA and the Water Industry Commission for Scotland (WICS), as well as regulated water and sewerage companies. Indirectly, the research will also benefit future UK consumers of water and sewerage services, who are the ultimate intended beneficiaries of the water industry reforms. Thus, the research impacted the Water Bill by: changing understanding and awareness of the costs associated with vertically separating water companies (**Impact 1**) and influencing the Bill's provisions with regard to mandatory company separation and the establishment of a retail market for non-household water customers (**Impact 2**). The research also changed regulatory policy makers' awareness of panel cost and productivity assessment methods, thereby influencing consideration of their future application to regulatory cost assessment (**Impact 3**).

Impacts 1 and 2: Influencing the Water Bill 2013-14
In its early regulatory reform consultation documents, Ofwat almost exclusively focused on the benefits of vertical separation to facilitate competition, with little consideration of the costs. Thus, Ofwat's May 2008 consultation (Ref 5.1) cited Ref 3.3 to extrapolate benefits of competition, while providing an incomplete discussion of the costs of vertical separation. In fact, Ofwat (Ref 5.1) selectively cited evidence from Ref 3.4 favourable to vertically separating sewage services, while ignoring Ref 3.4's evidence on the costs of vertically separating water services. Similarly, while Ref 3.3 & 3.4 are cited, the 2009 Independent Review of Competition and Innovation in Water Markets (Ref 5.2), barely reviewed academic evidence on the costs of separation.

Subsequently, Severn Trent Water funded a 2010-11 £62,200 project (Ref 5.3, Saal Principal Investigator) reviewing evidence on the costs of vertical separation, (Ref 3.6), and applying Ref 3.5's methodology to quantify the monetary costs of vertical separation. As this evidence was contrary to policy positions favouring vertical separation, its dissemination at a February 2011 ABS workshop (Ref 5.4) sponsored by the Environment Agency, Ofwat, and Water UK and attended by 17 of the 23 UK water and sewerage companies, shifted the policy debate. Letters from Severn Trent Water and WICS (Refs 5.5 and 5.6), both support this significant impact on understanding and awareness, and the resulting contribution to the prohibition of mandatory separation in the Water Bill.

Further evidence showing that our research changed the debate is provided by a United Utilities report published in June 2011 (Ref 5.7) which relies heavily on References 3.1, and 3.4-3.6 and the Severn Trent funded project's results for evidence. In reference to this report, United Utilities' website states that: "*We have helped drive debate through the publication of '(Ref 5.7)' , which looks at what structures best deliver secure, sustainable and affordable water services. Its core recommendation that vertically integrated water companies are the best means of delivering water and wastewater services was adopted in the White Paper*."

Ofwat's December 2011 review of the evidence base for retail competition and separation (Ref 5.8) further demonstrates Ofwat's changed awareness of the costs of separation. Ofwat cites Reference 3.3, but directly identified References 3.4, 3.6, and the Severn Trent funded research, applying the methodology of Reference 3.5, as "the most relevant studies detailing the costs arising from the loss of economies of scope". Moreover, the United Utilities report (Ref 5.7) is also carefully discussed, thereby demonstrating the percolation of the underpinning research's impact in the debate. As Ofwat particularly noted that the Severn Trent research identified "***significant economies of scope for vertical integration of water (but not retail with the rest of the value***

chain" (Ofwat's bolding), this reference demonstrates a further impact of the methodology identified in Reference 3.5. Thus, our evidence also impacted the Water Bill's provisions focusing on the establishment of a Great Britain wide retail market for non-household water customers. This further impact is supported by the above mentioned letters of support (Refs 5.5 and 5.6)

Impact 3: Increasing Regulatory Policy Makers' Awareness of Panel Assessment Methods
A May 2011 report (Ref 5.9) was specifically commissioned by Ofwat to assess the regulatory implications of academic panel cost approaches and the underpinning research (Refs 3.1,3.3,3.4, and 3.6) in particular. Ofwat's website states that: "*CEPA (Cambridge Economic Policy Associates), working with Dr David Saal of Aston University, looked at the feasibility of using panel and sub-company data" and "… conclude that using panel data would be beneficial for setting price limits at the next price review, and beyond.*"

Further impact from this report is illustrated by Ofwat's September 2012 response to DEFRA's call for evidence on the reform of the water industry's special merger regime (Ref 5.10). Ofwat noted that the ability to use panel data to overcome the loss of comparators in its regulatory efficiency assessments was not as strong as some indicated because: *"The introduction of accounting separation has reduced our ability to use panel data in the short term because companies have been required to reallocate costs. For this reason, although CEPA recommended the use of panel data when setting price limits at PR14 it noted that 'greater care will be needed as the panel will only be for three or four years".*

5. Sources to corroborate the impact (indicative maximum of 10 references)

5.1 " Ofwat's Review of Competition in the Water and Sewerage Industries – part II" May 2008 https://www.ofwat.gov.uk/competition/pap_con_reviewmrktcomp.pdf?view=consultation

5.2 "Independent Review of Competition and Innovation in Water Markets: Final report" 2009 http://archive.defra.gov.uk/environment/quality/water/industry/cavereview/documents/cavereview-finalreport.pdf

5.3 Grant Award to: Dr David Saal, Sponsor: Severn Trent Water, Value: £62,200, Title: "Measuring the potential cost of vertical unbundling the English and Welsh water industry", 1 April 2010 – 30 September 2010 (further details available on request).

5.4 Aston Workshop on Water Industry Restructuring and Competition http://www1.aston.ac.uk/aston-business-school/research/centres/accis/news-events/water-workshop/

5.5 A Letter from the Regulation Director of Severn Trent Water is available on request

5.6 A Letter from the Chief Executive Officer of the Water Industry Commission for Scotland (WICS) is available on request

5.7 "In Whose Hands? Exploring Vertical Integration in the Water Industry" http://corporate.unitedutilities.com/water-white-paper.aspx

5.8 "Ofwat's review of the evidence base for retail competition and separation" Ofwat , December 2011. http://www.ofwat.gov.uk/competition/review/pap_pos20111207retailevid.pdf

5.9 "Cost Assessment - Use of Panel and Subcompany Data" http://www.ofwat.gov.uk/future/monopolies/fpl/prs_web20110616costassess

5.10 "Ofwat's response to the UK Government's call for evidence on the reform of the special merger regime" (http://www.ofwat.gov.uk/publications/ofwatsubmissions/res_ofw201209ukgspecialmerger.pdf)