

Institution: University of Bath		
Unit of Assessment: C17 Business and Management Studies		
Title of case study: Influencing regulatory policy development and decarbonisation		
Period when the underpinning research was undertaken: 2006 – 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Ania Zalewska	Professor of Finance	October 2005 - present
Period when the claimed impact occurred: 2015–2020		
Is this case study continued from a case study submitted in 2014? No		
1. Summary of the impact <p>Changes to regulation, pricing and investment in the utilities sector are essential if the UK is to maintain high standards of public goods provision on the domestic market, and a leading international position. Research at the University of Bath, led by Professor Zalewska, into market risk of utilities has directly influenced regulatory decisions, policy development, and decarbonisation. It shaped the regulatory responses to achieving Net-Zero 2050 targets by lowering the cost of meeting renewable targets and improving the mix of renewable energy generation. It has also informed the recommendations of the National Infrastructure Commission (NIC) to the government with respect to changing the regulatory duties of the UK regulatory authorities. Professor Zalewska's research has also shaped the infrastructure investment strategy and financing decisions of the Civil Aviation Authority (CAA) and of the Competition and Markets Authority (CMA).</p>		
2. Underpinning research <p>In markets with low competition (such as utilities), it is common for customers to face limited alternative suppliers of services and goods, and to be charged higher prices than would occur in more competitive markets. To protect consumers, regulators restrict companies' behaviour and put ceilings on their prices. Regulation needs to be adaptive and carefully balanced to the needs of consumers, companies and the economy at large. However, even though regulation has to change to better serve consumers, regulatory changes can increase market risk for companies, which, in turn, may demand higher prices for goods and services.</p> <p>Since 2005, research at the University of Bath (Zalewska) in association with the University of Bristol (Grout) has addressed factors affecting the market risk of non-regulated and regulated companies, including the utilities sector. The focus of this research has been the impact of regulation on the development of regulated industries, assessing the effectiveness and fairness of regulatory practices and policies. Zalewska has developed methodologies to enable market risks to be calculated in more precise ways than standard (static) methods. Zalewska's research documents how market risk changes over time and how it is affected by regulatory changes, political uncertainty and changes in market conditions, such as the dot-com bubble (R1). Her research shows that, contrary to what is often claimed, regulatory uncertainty does not imply greater risk and, therefore, is not a justification for raising prices to compensate investors.</p> <p>Zalewska's research demonstrates how the market risk of utilities changed in the aftermath of the 'collapse' of the banking sector during the 2008 financial crisis (R2). At the time, there was a general perception that obtaining finance for investment in regulated companies would be more challenging after the 2008 financial crisis and, as a result, regulators should grant higher price</p>		

ceilings than would have otherwise been the case. However, her research showed that the market risk of the utility sectors in G12 countries did not increase, although, as predicted, it increased for other industrial sectors. The research supported the view that utility companies benefit from the relative security of limited competition and regulated prices, something that is not the case for other businesses (R2).

The research also assessed the impact of changes in the structure of regulation on relative market risk, such as the introduction into energy markets of the RIIO (Revenue = Incentives + Innovation + Outputs) model, and changes in the market risk of bonds. The results suggest that the changes in market risk cannot be attributed to sector-specific changes in regulation (R3) and the market risk of bonds is lower than proposed by regulators (R4).

Zalewska investigated the regulatory culture surrounding utilities and concluded that there was no evidence of regulatory capture, that is, that the regulators do act in the public interest rather than in the interests of the particular commercial or political groups that dominate the industry (R5). A study of the UK Competition Commission's decision-making process also found no evidence of regulatory capture (R6). Indeed, the research showed that some of its regulatory decisions might be too stringent (R5, R6).

3. References to the research

- R1 Grout, P. & Zalewska, A. (2006) 'The impact of regulation on market risk' *Journal of Financial Economics* 80(1), pp. 149–184. DOI: [10.1016/j.jfineco.2005.02.006](https://doi.org/10.1016/j.jfineco.2005.02.006)
- R2 Grout, P. A. & Zalewska, A. (2016) 'Stock market risk in the financial crisis' *International Review of Financial Analysis* 46, pp. 326–345. DOI: [10.1016/j.irfa.2015.11.012](https://doi.org/10.1016/j.irfa.2015.11.012)
- R3 Grout, P. & Zalewska, A. (2019) 'Adaptive regulation, market risk and the cost of capital'. *Report for the National Infrastructure Commission*. Available at: <https://nic.org.uk/studies-reports/regulation/adaptive-regulation/> (accessed 2 February 2021).
- R4 Zalewska, A. (2019) 'Estimation of the debt beta of the bond issued by Nats (En-Route) plc'. *Civil Aviation Authority*. Available at: https://www.caa.co.uk/uploadedFiles/CAA/Content/Accordion/Standard_Content/Commercial/Airspace/Air_Traffic_Control/NERL_RP3response_AppG.pdf (accessed 2 February 2021).
- R5 Grout, P.A., Jenkins, A. & Zalewska, A. (2014) 'Regulatory valuation of public utilities: A case study of the twentieth century' *Business History* 56(6), pp. 936–955. DOI: [10.1080/00076791.2013.848340](https://doi.org/10.1080/00076791.2013.848340)
- R6 Garside, L., Grout, P. A. & Zalewska, A. (2013) 'Does experience make you 'tougher'? Evidence from competition law' *The Economic Journal* 123(568), pp. 474–490. DOI: [10.1111/j.1468-0297.2012.02560.x](https://doi.org/10.1111/j.1468-0297.2012.02560.x)

4. Details of the impact

The UK Government's Clean Growth Strategy (2017) requires investment in renewable electricity development to achieve decarbonisation targets and to deliver a clean and secure supply of electricity at affordable cost. The UK's model of regulation for energy, water and telecoms also requires adaptation to achieve the Net-Zero 2050 targets, with UK regulated assets currently worth around GBP144,000,000,000 in energy and water alone (S1).

Research at the University of Bath (led by Zalewska) has significantly influenced the regulatory response to achieving the 2050 targets, as well as affecting the costs associated with investments in renewable energy. The Managing Director at the National Economics Research Associates (NERA) explained that "*her [Zalewska's] academic research and expertise played a key role in shaping the update of electricity generation costs (and) in helping the policy makers form confidence around the results and make decisions*" (S2).

Moreover, the research has impacted the recommendations given by the National Infrastructure Commission (NIC) to the government on the direction and cost of investing in the UK's energy,

water and telecom sectors to meet the coming challenges of achieving net zero (S1). It also impacted infrastructure investment strategy and financing decisions at the Civil Aviation Authority (CAA) (S3a&b) and the Competition and Markets Authority (CMA) (S4).

Influencing Contracts-for-Difference (CfD) at DECC/BEIS

The UK Government's Contracts-for-Difference (CfD) Scheme (Energy Act 2013) aims to reduce risks for investors in renewable electricity development through offering a fixed price for the sale of electricity. Assessing the risk of CfD projects, and thus their auction price, is an essential component of the success of the CfD Scheme, because the auction price has a major financial impact on UK citizens and businesses, thereby affecting the competitiveness of the UK economy.

In 2015, Zalewska was appointed by the Department for Business, Energy & Industrial Strategy (BEIS), to conduct an analysis and to produce a review "*assessing costs and benefits of energy policies and [in] setting administrative strike prices of auctions for low-carbon CfDs*" (S5). Her research into market risk and cost of capital demonstrated that the costs of risk compensation for some renewable technologies should not increase (S6a, S6b). The research recommended that the costs of compensation for risk that were proposed by NERA Economic Consulting were too high and that they should not increase between 2015 and 2030 (S2). The 2016 BEIS Electricity Generation Report (S7) states that, based on the recommendation of Zalewska, "*hurdle rates stay flat between now and 2030*". Before the research, for most renewable technologies, FOAK (first of a kind) CCS (carbon capture and storage) and nuclear, BEIS had used the "*75% success rate hurdle rates from the NERA report*". After the research, BEIS "*adjusted the NERA 75% success rate hurdle rate by applying a lower effective tax rate to that used by NERA*" (S7p14). This meant that:

"... following from [Zalewska's] calculations, some of the renewable energy technologies could be more attractive and cheaper to use than the technical studies suggested, impacting both on the anticipated cost of meeting renewable targets and hence the renewable mix" (S2).

Indeed, while the first wave of CfD auctions resulted in offshore wind prices of GBP140 to GBP150 per megawatt-hour (MWh), in the 2017 CfD auction, which adopted these recommendations, the price decreased to an average of GBP64 per megawatt-hour (MWh) (S8).

Influencing the National Infrastructure Commission

In 2019, Zalewska and Grout were commissioned by the National Infrastructure Commission (NIC), which provides impartial advice to the UK government on major infrastructure challenges, to assess the potential impact that changes in the structure of utility regulation might have on the cost of capital of regulated utilities. Their report (R3) advised the NIC that significant regulatory changes have had limited effect on the cost of equity and cost of capital for regulated companies. This finding significantly influenced the NIC's recommendations:

"The evidence does not suggest that the implementation of regulatory policies such as putting more emphasis on environmental performance, the public interest or helping vulnerable customers, would necessarily increase the cost of capital of these companies" (S1p46).

Moreover, the recommendation had material effect, because the NIC report states that even a "0.5 percentage point increase in cost of capital for energy and water would raise the amount of revenue that needs to be recovered from consumers by around £720 million [GBP720,000,000] a year" (S1p46).

Influencing the Civil Aviation Authority and the Competition and Markets Authority

In 2019, Zalewska was commissioned to provide an expert opinion on the cost of debt used by the Civil Aviation Authority (CAA), the UK aviation regulator, in setting regulatory requirements for NATS (En Route) between 2020 and 2024 (S3a, S3b). The research showed that the debt

beta estimate of 0.13 used by the CAA was too high (R4). The CAA stated that it “*reviewed a wide range of evidence ... including reports from NERA and Professor Zalewska*” (S3a) and decided not to follow the advice of Europe Economics, whose calculations suggested a debt beta in the range of 0.19–0.25, but lowered it to 0.1, following the estimations of Zalewska (R4). Lowering debt beta has a material impact on the regulatory rate of return, and consequently, the prices charged to consumers and businesses and the earnings of companies.

In 2020, Zalewska’s report (S4) was used by the Competition and Markets Authority (CMA) in resolving a dispute between four water companies and their regulator OFWAT with regard to setting the regulatory requirements for 2020–2025. In relation to the debt beta, the CMA “*refer specifically to the ‘direct’ econometric estimates of the debt beta put forward by Professor Zalewska in relation to the NATS price redetermination, which indicated that the debt beta was at, or below, 0.1*” (S4), and it reduced the OFWAT debt beta from 0.125 to 0.1, impacting directly on how much the water companies are allowed to earn on their investments.

5. Sources to corroborate the impact

- S1 National Infrastructure Commission. (2019) ‘Strategic Investment and Public Confidence’. Available at: <https://nic.org.uk/app/uploads/NIC-Strategic-Investment-Public-Confidence-October-2019.pdf>
- S2 Testimonial from Managing Director, NERA Economic Consulting, dated 5 July 2019.
- S3a UK Civil Aviation Authority. (2019). ‘UK RP3 CAA Decision Document’, CAP 1830. Available at: <https://publicapps.caa.co.uk/docs/33/CAP%201830%20CAA%20Decision%20Doc.pdf>
- S3b UK Civil Aviation Authority. (2019). ‘UK RP3 CAA Decision Document: Appendices’, CAP 1830a. Available at: <https://publicapps.caa.co.uk/docs/33/CAP%201830a%20appendices.pdf>
- S4 Competition & Markets Authority. (2020) Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations: Provisional findings. https://assets.publishing.service.gov.uk/media/5f7c467ee90e070dde709cee/Water_provisional_determinations_report_all_-_September_2020_-_web_-_online-2.pdf
- S5 Testimonial from Deputy Director Corporate Finance Advisory and Investor Relations (CAIR), Department for Business, Energy and Industrial Strategy (BEIS), dated 5 October 2018.
- S6a NERA Economic Consulting. (2015) Electricity Generation Costs and Hurdle Rates. Lot 1: Hurdle Rates update for Generation Technologies: Prepared for the Department of Energy and Climate Change (DECC). Available at: https://www.nera.com/content/dam/nera/publications/2016/NERA_Hurdle_Rates_for_Electricity_Generation_Technologies.pdf
- S6b Zalewska, A. (2015). Comments of the NERA’s Report “Electricity Generation Costs and Hurdle Rates. Lot 1: Hurdle Rates Update for Generation Technologies”. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/566813/Prof_Zalewska_Review_of_NERA_Hurdle_Rates_for_Electricity_Generation_Technologies.pdf
- S7 BEIS. (2016) Electricity Generation Costs (9 November). Available at: <https://www.gov.uk/government/publications/beis-electricity-generation-costs-november-2016>
- S8 Evans, S. (2017). Analysis: UK auction reveals offshore wind cheaper than new gas. *Carbon Brief*. (11 September) Available at: <https://www.carbonbrief.org/analysis-uk-auction-offshore-wind-cheaper-than-new-gas>