

# Flexible Mixed Logit with Posterior Analysis: Eliciting Willingness to Pay for Grid Resilience

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**Abstract** This paper presents and employs an alternative approach to explore consumer preferences and willingness-to-pay (WTP) for resilience of the electricity grid. The methodological and practical relevance of this approach is demonstrated using the example of the UK's incentive regulation scheme for electricity distribution network operators (DNOs). The estimation strategy flexibly accounts for preference heterogeneity in the population, allows for scale heterogeneity (i.e. heterogeneity in the randomness of choice) and exploits individual posterior distributions to improve the estimates. Since the results suggest significant parameter heterogeneity within and across DNOs, it is argued that Ofgem's current method to evaluate consumer preferences and WTP is likely to result in an inefficient level of resilience services. The welfare implications in case of public and private goods and services are discussed. The suggested approach is straightforward to implement, could improve policy evaluations and foster more nuanced and efficient incentive regulation.

**Keywords** Willingness-to-Pay, electricity service quality, mixed logit, social welfare

**JEL Classification** C18, C38, L51, L94, Q48

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