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ALTERNATIVE BENCHMARKING APPROACHES FOR REGRESSIONS

17th October 2018 - CAWG



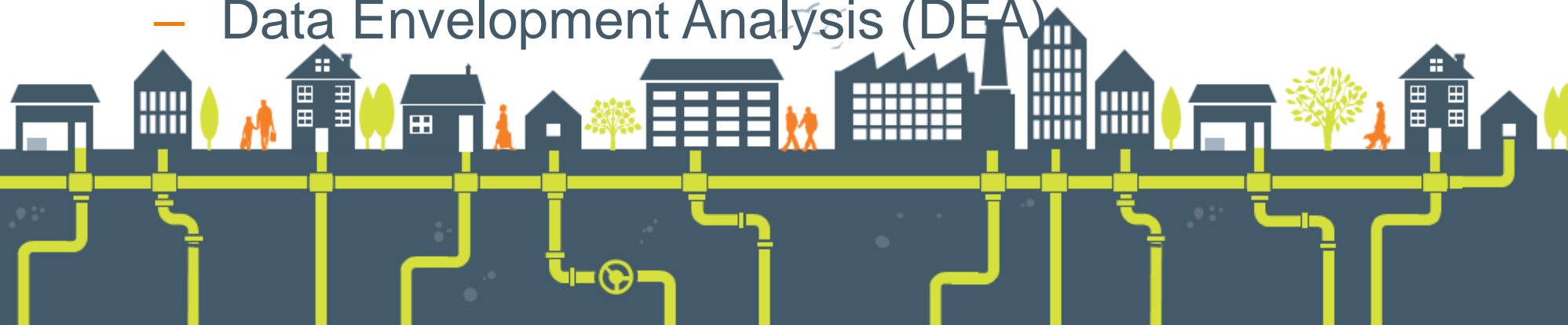
The robustness of the benchmark

- Choice of benchmark is solely down to regulatory judgement
- Current benchmarking – Ordinary least squares (OLS) coupled with upper-quartile benchmark
- Accuracy of the modelling
- Choice of benchmark and cost drivers
- Consideration of alternative approaches
- Regulatory best practice to use several approaches which highlighted more than one view of companies efficient cost level



Robust benchmarking approaches

- Top-down – involves company or functional level comparisons between companies /business units or economic aggregates
 - Cost benchmarking (OLS/SFA/DEA) using panel data
 - Historical trend analysis – Unit cost comparison
 - Historical trend analysis – total factor productivity
- Bottom-up – tend to be based on detailed disaggregated information from company, using case by case basis
 - Expert engineering review/unit cost/discrete projects etc....
 - Process benchmarking
 - Reference models
- Alternatives include but not exhaustive..
 - Stochastic Frontier Analysis (SFA)
 - Data Envelopment Analysis (DEA)



Top down alternatives

- Alternatives include but not exhaustive..
 - Stochastic Frontier Analysis (SFA)
 - Mathematical optimisation approach which creates virtual comparators based on weighted actual comparators
 - Data Envelopment Analysis (DEA)
 - OLS model extended to include an additional term (inefficiency term)
- Both prevalent in European regulation but SFA is more popular



Assessment of top down benchmarking approaches

	OLS	DEA	SFA
Advantages	Allows statistical testing, well understood by industry	Multiple outputs and inputs can be modelled more readily, academic rigour, no functional form needs to be specified	Allows statistical testing, specifically deals with 'noise', accuracy of efficient cost prediction, academic rigour, company specific factors can be accounted for in model
Disadvantages	Cannot account for noise without adhoc adjustments, company specific factors need adjusting for outside of modelling	Accounting for 'noise' requires extensions to the model, some factors need adjusting outside of modelling	Assumption on functional form needed, and assumptions on 'noise' required.
Risks	Adjustments are based on regulatory judgement and adhoc	Unknown impact for GDN's	Unknown impact for GDN's

