Regulatory Benchmarking in the Utility Industry – Lessons for airport regulation?

CHRISTOPH RIECHMANN AND DAN ELLIOTT

24. November 2005

frontier economics

Overview

- What is the regulatory problem?
- Can benchmarking help solve it?
- Can benchmarking work in practice?
- Can we draw lessons for airport regulation?
- Conclusion

1. What is the regulatory problem?

What should a regulatory regime achieve?

- **Deliver benefits for customers in the form of:**
  - Lower prices
  - A good quality of service
  - Improved efficiency, and hence future ongoing benefits
  - Fulfilment of certain social obligations (e.g. uniform tariff)
- **Using a regulatory regime that is:**
  - Sustainable
  - Robust (politically acceptable and economically viable)
  - Low cost

Delivery hampered by information problems

- **The regulator may observe reported costs**
  - But these may not be accurate
- **The regulator will not directly observe efficient costs**
  - 'Buy' accurate information – allow the business to keep the excess profits of innovation for a period; or
  - Incentivise a group of similar firms to beat each other's efficiency (side-step the problem)

Buying information may not be sufficient

- **Provide business with incentive to achieve, and hence reveal, efficient level of costs**
  - retains profits of unexpectedly high efficiency
- **Return efficiency to customers at price review**

Advantages	Disadvantages
• encourages some efficient behaviour • returns benefits to customers at regular intervals	• arbitrary division of gains between customers and businesses - could be politically unacceptable • encourages strategic behaviour by companies in the timing and allocation of efficiency improvements • unless firms are myopic, the true efficient level of costs may never be revealed

2. Can benchmarking help solve it?

Yardstick competition – a cheaper way? (1)

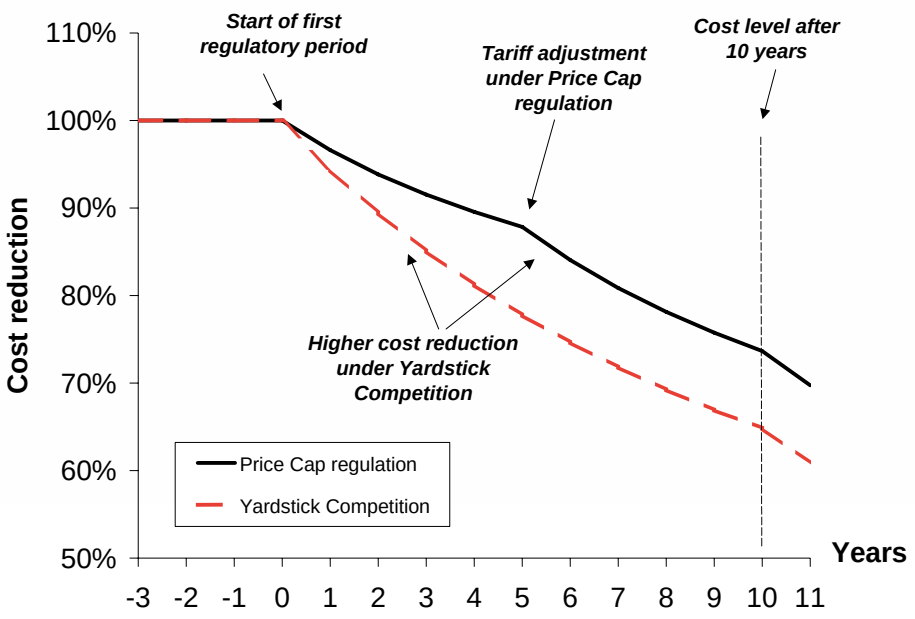
- **Price-Cap regulation was introduced as a feasible and incentive enhancing regime in early 1980s**
- **Practical experience confirms some deficiencies**
  - the settlement at the point of regime change needs to be carefully established to avoid political instability later;
  - price reviews still linked to companies' own cost - biased incentives for the timing and allocation of efficiency gains.
- **Yardstick competition**
  - Links regulated firm's prices to industry productivity improvement
  - fully breaks the cost-price link at the firm, but not industry level - leading to less costly systemic errors;
  - provides more neutral incentives for the timing and allocation of savings

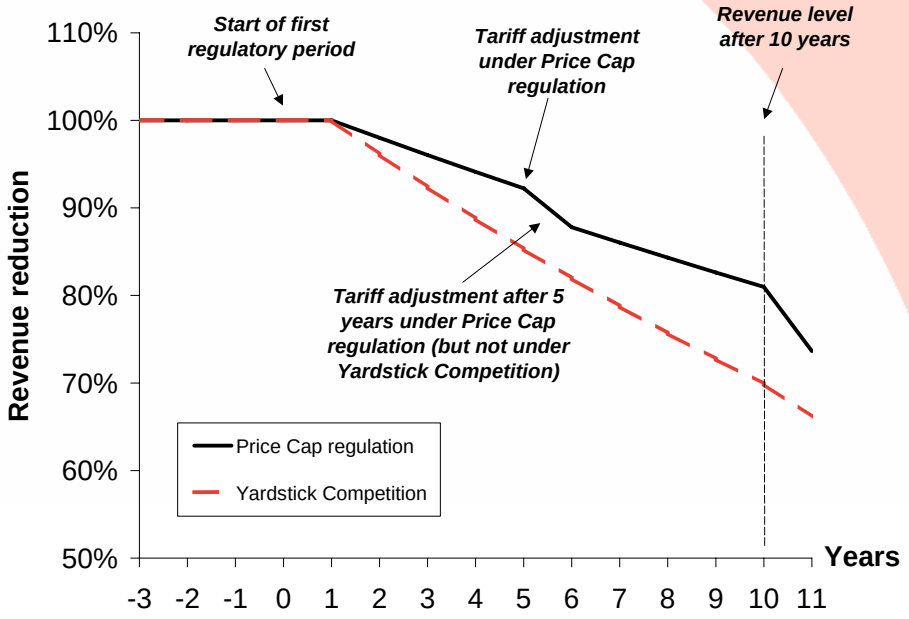
Yardstick competition – a cheaper way? (2)

- **The prices a firm can charge are based upon a benchmark of costs in the rest of the industry**
  - Firm's own costs have limited impact (if any)

Advantages	Disadvantages
• no incentive to engage in strategic behaviour - the price is determined by other similar businesses • encourages firms to move to the efficient level of costs as soon as possible • natural mechanism to transfer gains to customers - not unlike in real competitive markets	• circularity – need information on the current pattern of efficiency in the sector to establish yardstick competition

Advantages of Yardstick Competition (1)





With base case assumptions, yardstick competition delivers higher cost reduction incentives and hence higher revenue reductions…

Advantages of Yardstick Competition (2)

- **Plus benefit for average and above average company (shareholder)**
  - not guaranteed for all companies

Regulatory mechanism	10 year revenue reduction	Average annualised return on capital
Cost plus	7%	7% (approx)
Price cap with 2% p.a. required revenue reduction – 5 year lag	19%	7.8%
Yardstick competition resulting in 4% p.a. revenue reduction during period – 10 year lag	30%	8.1%

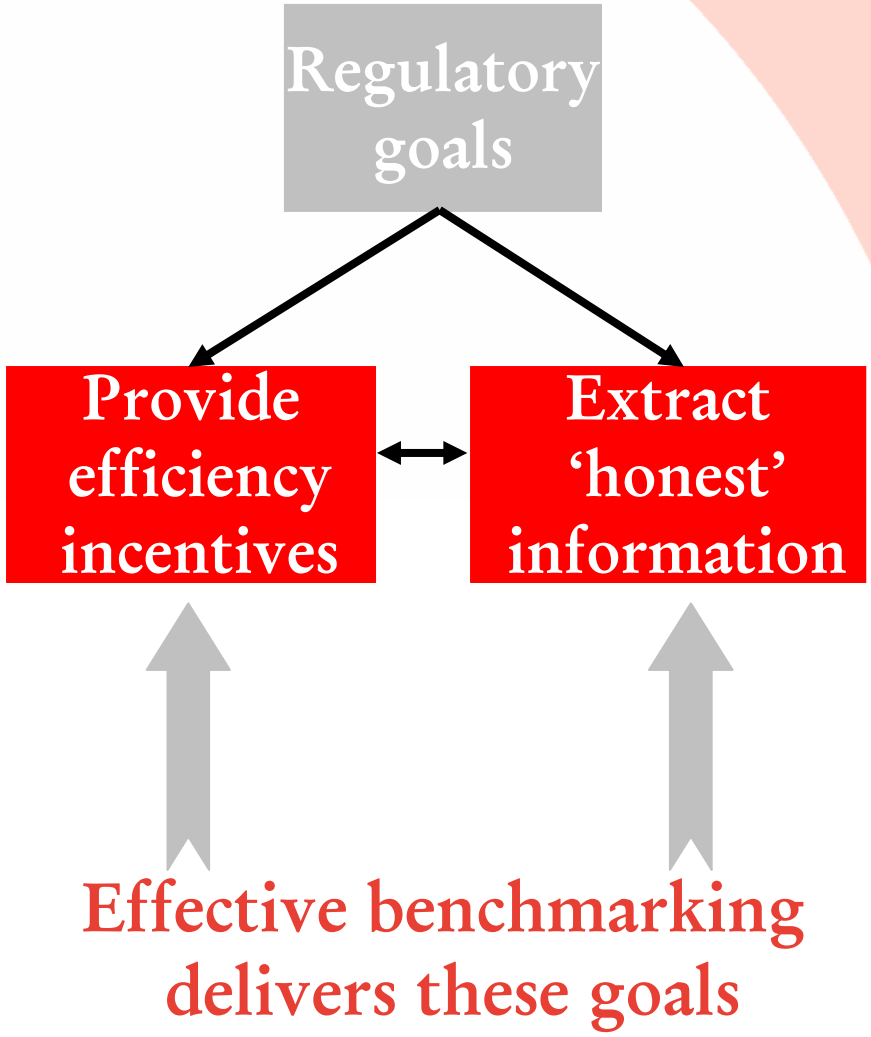
Average annualised rate of return for average company

Source: Frontier Economics model

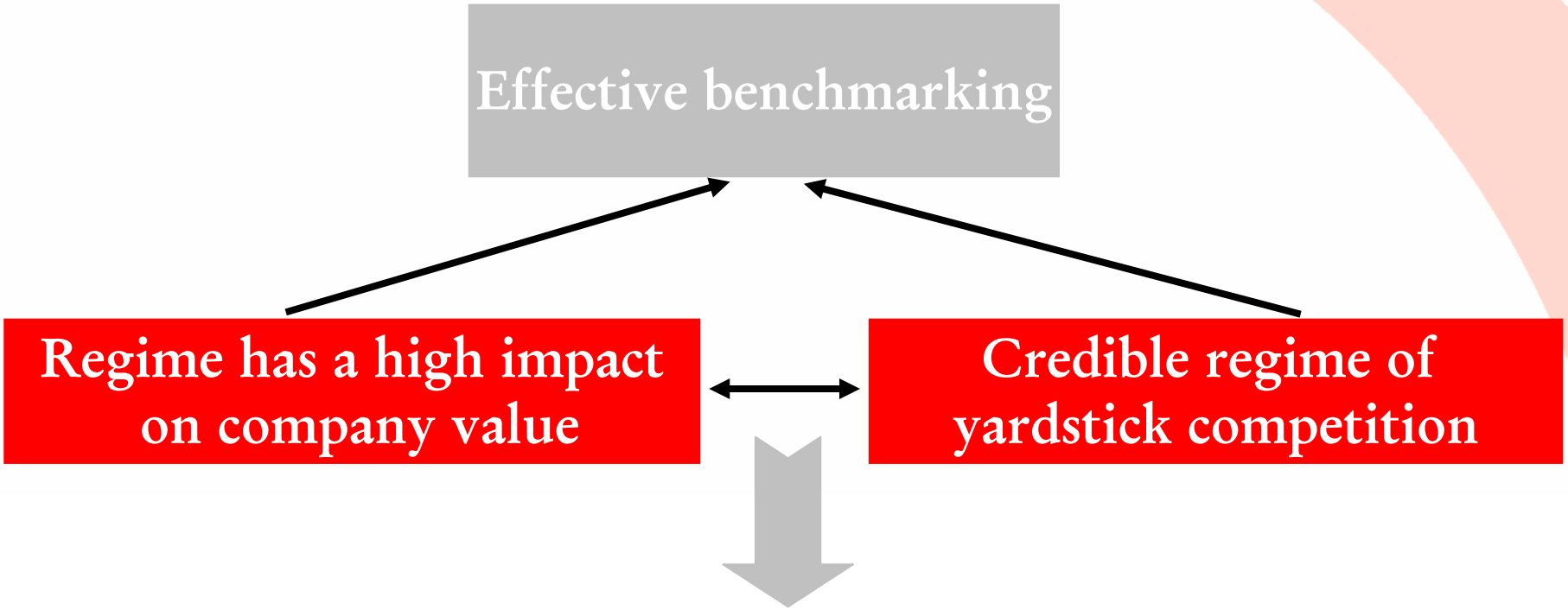
Potential pareto improvement in case of transparent yardstick approach rather than price cap or cost plus

Disadvantages of Yardstick Competition - Can we break out of the circularity?

- **Yes, by using benchmarking simultaneously:**
  - incentivise firms to report costs,
  - incentivise them to monitor the costs of others; and
  - measure the efficiency of the sector



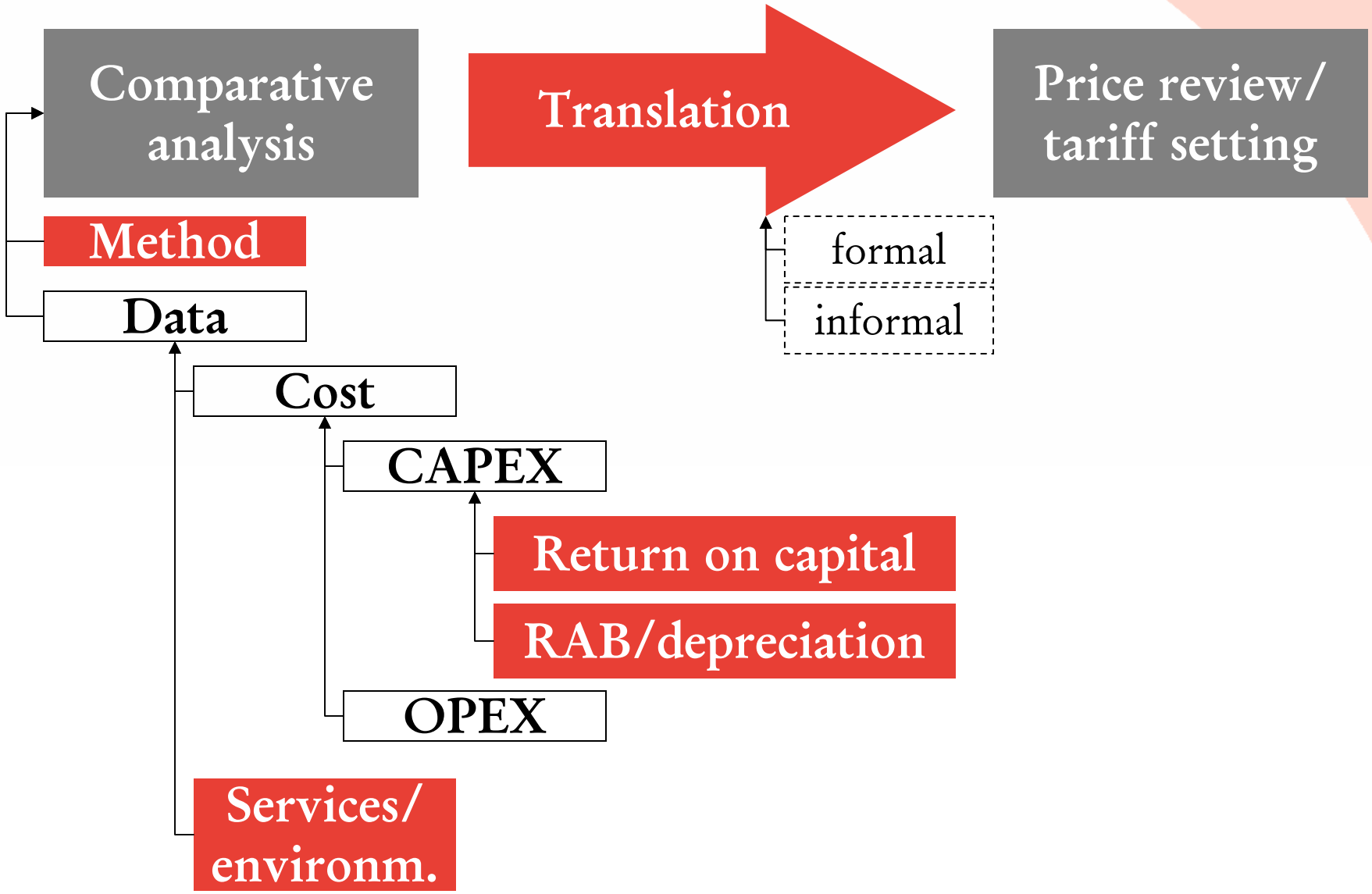
When will benchmarking be effective?



1. Regulator has incentive to develop robust information collection regime
2. Company has incentive to provide honest information
3. Regulator has incentive to design robust benchmarking model
4. Strong incentives to reveal information and improve efficiency
   – robust and credible model with high value implications

3. Can benchmarking work in practice?

Principle issues for implementation



Benchmarking in practice - 'Claims and Responses'

- Robustness of benchmarking approaches
- Uncertainty about structural variables
- Uncertainty about capital cost measures
- Allowed returns under benchmarking

Robustness of benchmarking approaches

- **Claim**
  - "As there is no single model or methodology which can be justified it is inappropriate to simply choose one for regulatory purposes".
- **Response**
  - Different models serve to answer different regulatory questions.
  - It is essential to initially pose the correct "benchmarking question", which may differ depending on the political and historical context and this affects the method to be adopted.

Uncertainty about structural variables

- **Claim**
  - "There is uncertainty about which cost drivers to include in the benchmarking analysis, again making it unsuitable for ensuring convergence across firms in the regulated industry".
- **Response**
  - the choice of variable firstly depends on the precise scope of analysis

    long run versus short run efficiency comparison;
  - formal approaches exist to identify the most appropriate variables.

Uncertainty about capital cost measures

- **Claim**
  - "Comparable capital cost measures are difficult to determine and hence total cost benchmarking analysis can not be undertaken".
- **Response**
  - Capital costs can be measured relatively easily.
  - The data typically exists to do so.

Allowed returns under benchmarking

- **Claim**
  - „If all companies are compared against one or few best practice firms, then the typical firm would not be allowed to recover its cost of capital. As a result companies would cease to invest“.
- **Response**
  - Regulator could raise the allowed rate of return.
  - Then, industry on average earns a normal rate of return.
  - Efficient firms would earn a return above normal levels, inefficient firms would earn a return below the market based level.
  - Shareholders would replace the management of the inefficient firms.

4. Can we draw lessons for airport regulation?

Overview

- Yardstick and benchmarking approaches are discussed in the academic literature as well as several regulatory authorities (e.g. Gillen/Lall (1997, 1998), Pels et al. (2000), Adler/Berechman (2000), Adler/Oum/Yu (2002) or CAA (2000))
- Practical implementation of yardstick and benchmarking approaches is rather limited to date
- Different regulation approaches are used in practice

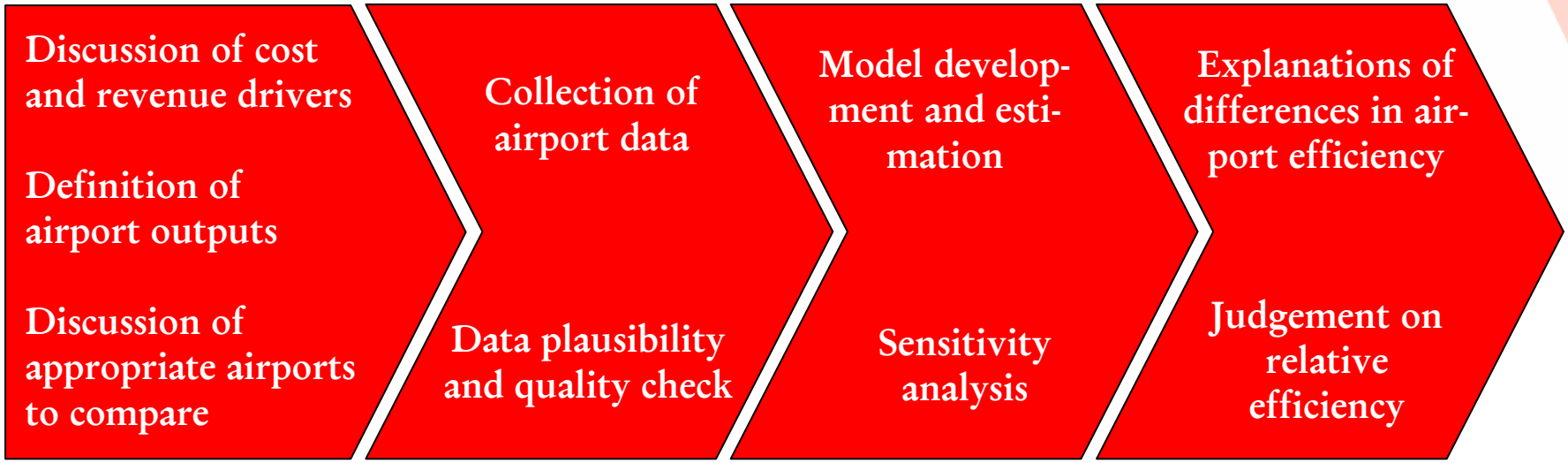
Regulation approaches in practice

Regulation approach	Examples
Price Cap Regulation	**UK:** The United Kingdom has been the earliest and strongest user of price cap regulation. When the BAA and Manchester Airport were privatised in 1987, price cap regulation was immediately applied to their activities.
No regulation	**New Zealand:** In 2001, all airports in New Zealand were unregulated in terms of fees and charges. This includes the three privatised international airports (Auckland, Wellington and Christchurch).
'Benchmarking'	**Montevideo Uruguay:** Fees are limited by comparison to charges at airports within 500 km handling at least 2 million passengers (e.g. Buenos Aires) **Macao:** The private airport operator in Macao must receive approval every year for its fees. The proposed fees are evaluated based on fees at surrounding airports.

Regulation approaches in practice - Some examples

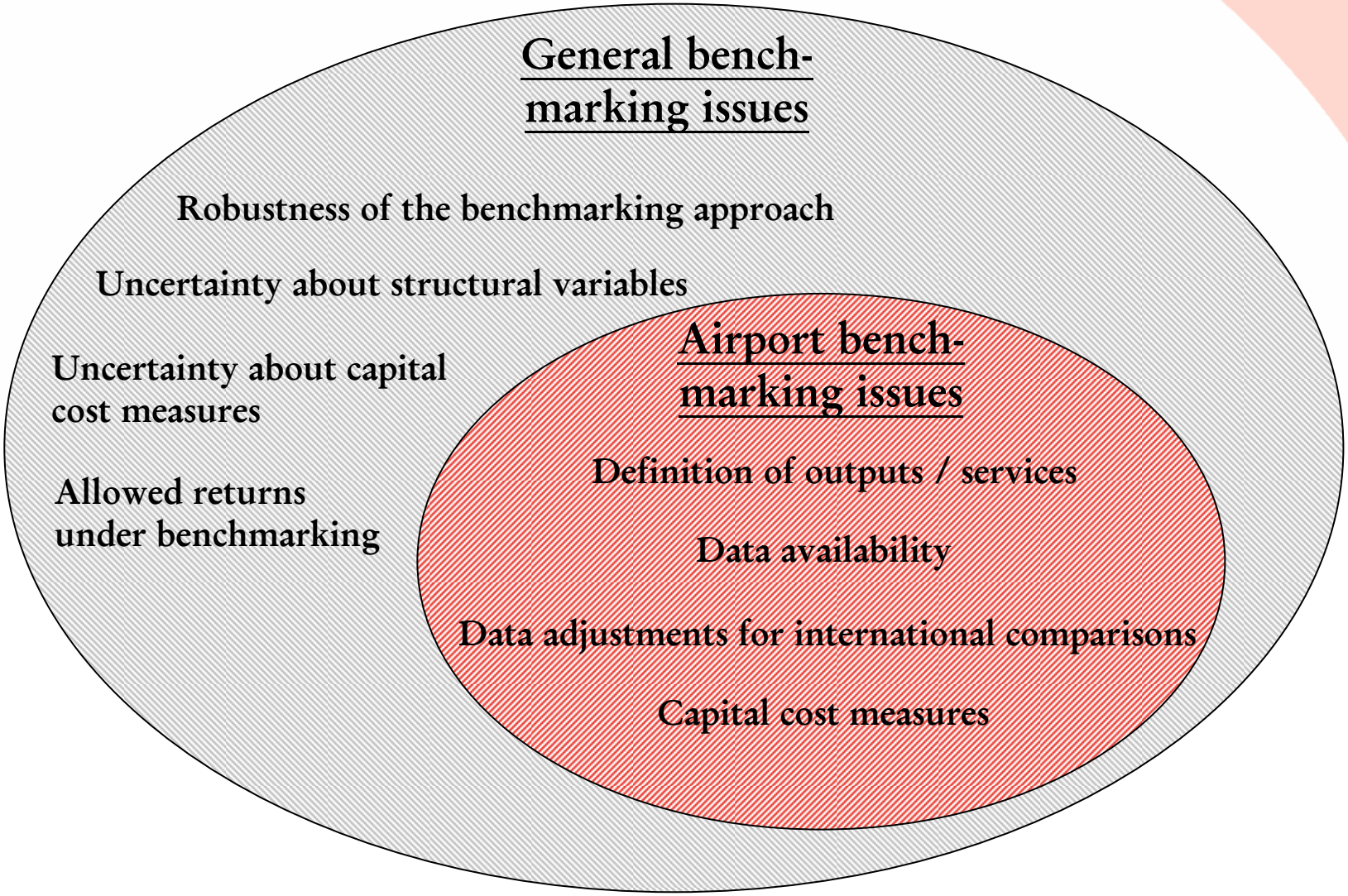
Source: Tretheway (2001)

Process of airport benchmarking



Source: CAA

Challenges of airport benchmarking



Definition of outputs / services

- **Claim**
  - "It is difficult to define appropriate outputs, which also have to reflect the quality dimension of the different airport services."

Data availability

- **Claim**
  - "The availability of airport data is in most cases limited. This can constrain the choice of methods and approaches as well as the meaningfulness and robustness of derived conclusions."

Data adjustments for international comparisons

- **Claim**
  - "Even if company outputs are relatively homogenous, data adjustments have to be made that take differences in the operational environment and the legal framework into account."

Capital cost measures

- **Claim**
  - "Airports are faced with lumpy investment and the different airport investment cycles distort any efficiency comparison if they are not properly taken into account."

5. Conclusion

Conclusion – Is it worthwhile?

- **Yardstick competition brings about benefits**
  - gives stronger incentives than price cap regulation;
  - provides better risk allocation;
  - provides balanced incentive to make efficiency gains; and
  - reduces administrative burden (in the medium term)
- **Yardstick competition benefits most stakeholders (at least in medium term)**
  - consumers, shareholders and good management better off;
  - inefficient management loses out – this is one key intention of Yardstick Competition

Conclusion – Can it work in practice?

- **Benchmarking can answer a wide range of regulatory questions**
  - the range of possible methodological approaches is actually rather small; and
  - the use of different models results from different questions being asked
- **Total cost measures and environmental factors are better defined than is commonly appreciated**
- **The concern that benchmarking may lead to the average firm under-recovering costs relates not to benchmarking but to the final regulatory settlement**

Conclusion – Has it worked in practice?

- **Yardstick and benchmarking approaches are now common-place in the EU utility regulation**
- **DEA is the preferred method for comparative efficiency analysis in electricity**
  - DEA: NL, N, S, FIN, A, B
  - other approaches: UK, DK, S (in future)
- **Differences in the use of efficiency comparison for tariff setting in electricity**
  - formal translation to tariffs: N, NL, FIN, DK, S (future)
  - informal use of efficiency analysis: UK, S, A, B

Conclusion – Challenges for airport benchmarking

- Meaningful measures of output / service have to be defined which also have to reflect the quality dimension
- The choice of methods and approaches is constrained by the availability of airport data
- International benchmarking of airports is complicated by differences in the operational environment and the legal framework
- Different airport investment cycles have to be taken into account in an efficiency comparison

THE FRONTIER ECONOMICS NETWORK
LONDON | COLOGNE | MELBOURNE | SYDNEY

Frontier Economics Ltd, 71 High Holborn, London, WC1V 6DA
Tel. +44 (0)20 7031 7000 Fax. +44 (0)20 7031 7001 www.frontier-economics.com