Transport project evaluation: feasibility risk assessment and scenario forecasting - DTU Orbit (13/12/2018)

Transport project evaluation: feasibility risk assessment and scenario forecasting

This paper presents a new approach to transport project assessment in terms of feasibility risk assessment and reference class forecasting. Conventionally, transport project assessment is based upon a Cost-Benefit Analysis (CBA) where evaluation criteria such as Benefit Cost Ratios (BCR) are obtained. Recent research has however proved that substantial inaccuracies are present when obtaining the monetary input to the CBA, particularly as concerns the construction costs and demand forecasts. This paper proposes a new approach in order to address these inaccuracies in a so-called Reference Scenario Forecasting (RSF) frame. The RSF is anchored in the cost-benefit analysis; thus, it provides decision-makers with a quantitative mean of assessing the transport infrastructure project. First, the RSF method introduces uncertainties within the CBA by applying Optimism Bias uplifts on the preliminary construction cost estimates. Hereafter, a quantitative risk analysis is provided making use of Monte Carlo simulation. This approach facilitates random input parameters based upon reference class forecasting, hence, a parameter data fit has been performed in order to obtain validated probability distribution functions. The latter have been placed and ultimately simulated on the inaccuracies of determining demand forecasts, i.e. leading to travel time savings and ticket revenues of the project. Finally, RSF makes use of scenario forecasting where trend scenarios such as economic growth and level of cross-border integration are investigated. The latter is highly relevant as RSF is demonstrated by a case example concerning the fixed link between Elsinore in Denmark and Helsingborg in Sweden

General information
State: Published
Organisations: Department of Transport, Transport policy and behaviour, Department of Management Engineering, Management Science
Contributors: Salling, K. B., Leleur, S.
Number of pages: 12
Pages: 180-191
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Transport
Volume: 32
Issue number: 2
ISSN (Print): 1648-4142
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.26 SJR 0.402 SNIP 0.953
Web of Science (2017): Impact factor 1.267
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.18 SJR 0.382 SNIP 0.983
Web of Science (2016): Impact factor 1.163
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 0.77 SJR 0.371 SNIP 0.64
Web of Science (2015): Impact factor 0.594
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 0.91 SJR 0.327 SNIP 0.984
Web of Science (2014): Impact factor 0.553
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 0.82 SJR 0.383 SNIP 0.653
Web of Science (2013): Impact factor 0.529
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 1.06 SJR 0.427 SNIP 0.697
Web of Science (2012): Impact factor 1.081