The value of flexibility in airport planning: a real options analysis

Álvaro Costa, Álvaro Nascimento, Carlos Cruz

CITTA – Research Centre for Territory, Transports and Environment. Faculty of Engineering, University of Porto
CEGEA – Centro de Estudos de Gestão e Economia Aplicada. Universidade Católica Portuguesa Departamento de Engenharia Civil e Arquitectura, Instituto Superior Técnico, Universidade Técnica de Lisboa
afcosta@fe.up.pt, ccruz@civil.ist.utl.pt, anascimento@porto.ucp.pt
Phone/fax numbers: 00 351 225081512 - 00 351 225081486

In the last two decades, airports have suffered major changes. Governments, airport authorities, airlines and other stakeholders, invested large amounts of capital, building large and capital intensive infrastructures under a great deal of uncertainty. The risk comes essentially from the difficulty in forecasting demand in the long run. Under a highly dynamic environment, how to make economically rational decisions on investments of billions of Euros, and with revenue highly unstable and unpredictable? Literature and empirical evidence, suggests that the development of airports should be done in incremental steps, decreasing the CAPEX and thus making the project less risky. This paper, looks at a case study – the future new Lisbon Airport – identifying the possibilities for flexible solutions, and quantify the economic value of developing a more flexible "airport system development plan". The methodology used is a Real Options analysis for a 30 year timeframe. Results suggest that by developing flexible solutions, economic benefits (both public and private) may be expected. In fact, the NPV of a project may change from negative to positive.

Keywords: airport planning, flexibility, real options.