

# Low Cost Carriers and Transport Network Efficiency

## (格安航空 (LCC) の都市間交通ネットワーク効率への影響に関する研究)

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### 1. Background and Objective

In comparison to full service carriers (FSC), low cost carriers (LCC) provide low ticket fares with fewer comforts. LCC gained high growth rates in recent years around the world and achieved around 25% share of global air traffic. In Japan, LCC are regarded as means to stimulate air travel, increase tourist numbers and improve regional economy. Therefore, Japanese Government, airport managers and local governments support LCC development. Although LCC entry to Japan was as late as 2012, they quickly gained around 9% domestic market share, thanks to the above mentioned favorable environment.

LCC can be good for people as they provide cheaper services and more accessibility, but they also pose a threat to other operators. Studies from Europe indicates that, LCC grow using secondary routes, avoiding direct competition with FSC at first, but then after gaining a strong market position they start to compete with FSC using major airports as well. Due to their cost advantage, LCC can draw significant amount of passengers from FSC and high speed railways (HSR), endangering their profitability. Moreover, FSC may withdraw from unprofitable regional routes, if they cannot gain enough profit from lucrative lines due to the fierce competition.

In order to take correct policy measures, it is necessary to estimate positive and negative impacts of LCC growth on people, environment and other operators considering whole network. There are many existing behavioral studies that estimate LCC-FSC competition on specific routes basis. Unlike them, this study will try to analyze what would happen on the country scale, if LCC could reach a significant market share.

### 2. Methodology

This study intends to analyze hypothetical situations in which LCC gain 15% (for normal growth) and 25% (for fast growth) domestic market share on the network of 22 major airports. In order to do that; first, LCC growth scenarios will be prepared by increasing LCC flight numbers on current destinations while keeping FSC flight numbers constant. Next, OD demand will be estimated based on new frequencies using a gravity

model. Then, network simulation will be carried out using a multimodal planning model to find route choice and modal distribution of OD traffic. Finally, network analysis will be performed to calculate several indicators such as average travel time, average user cost, operators' profit, modal share and CO<sub>2</sub> emissions to measure benefits and costs of LCC growth on people, environment, other operators and network efficiency. Moreover, in order to assess importance of slot distribution policy at congested airports, two situations will be considered in scenario set up: 1) priority will be given to LCC; 2) priority will be given to FSC.

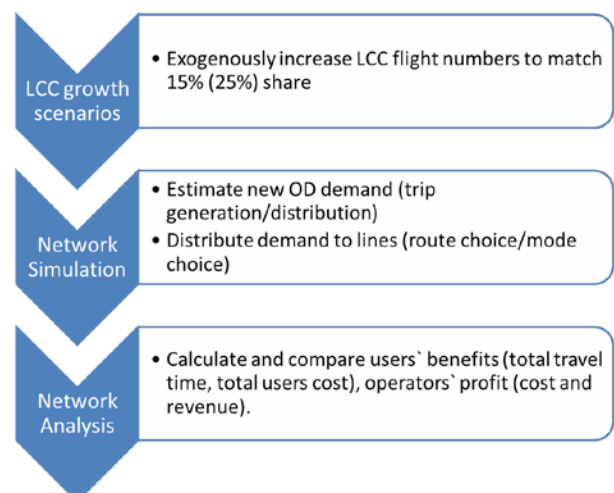


Figure-1 Methodology of the study.

### 3. Conclusion

Currently, this study is in initial phase. But after completion, I expect to get answers to following questions:

- 1- How much benefit will people gain if LCC reach 15% (25%) domestic market share?
- 2- How LCC growth will affect CO<sub>2</sub> emissions?
- 3- How much revenue will be lost for FSC and HSR?
- 4- How slot distribution policy in congested airports can affect LCC growth?

I will explain objective and methodology in detail at the seminar and provide a numerical example on a small-scale network.