AIRLINE EMISSION CHARGES AND THE AIRLINE NETWORK CHOICE

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Overview

Airline emission charges are an important potential policy tool in the growing movement to address global warming. This paper explores the effect of airline emissions charges on the network structure choice, using a detailed model of a monopoly airline. By comparing a hub-and-spoke network (HS), a point-topoint network (PP) , a mixed network (MX) and a 2-hub network (2H), we find that emission charges will have a significant effect on choosing the optimal network structure. Finally, welfare analysis are discussed in detail.

Methods

Consider three symmetrically-located airports (cities), K, A and B, which are all capacity constrained and where K and A can work as hub airports, and assume that only hub airports allow flight connections for one-stop services. . The cost of serving passengers is aircraft operating costs, which consist of fuel cost and the fixed cost. The airline can choose from amongst four networks, that is, a hub-and-spoke network (HS), a point-to-point network (PP), amixed network (MX), and a 2-hub network (2H).

Results

By comparing a hub-and-spoke network (HS), a point-topoint network (PP), a mixed network (MX), and a 2-hub network (2H) when considering airline emission charges, we obtain the airline's optimal structre. Additionally, welfare analysis shows the second-best socially optimal network and first-best socially optimal network.

Conclusions

By comparing a hub-and-spoke network (HS), a point-topoint network (PP) , a mixed network (MX) and a 2-hub network (2H), we find that emission charges will have a significant effect on choosing the optimal network structure. An increase in the effective price of fuel costs will bring about the different optimal network structure .

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