

Transportation Research Symposium 2025 Conference Abstracts

Intercontinental air travel in the era of carbon pricing: demand and hub shifts

Xavier Fageda^a, Katrin Oesingmann^{b*}

^aDepartment of Econometrics, Statistics and Applied Economics, University of Barcelona, Avinguda Diagonal, Edifici 690, 08034 Barcelona, Spain
^bInstitute of Air Transport - Department of Air Transport Economics, German Aerospace Center (DLR), Linder Hoehe, 51147 Cologne, Germany

Abstract

In this paper, we investigate the causal relationship between carbon pricing and air travel demand in the intercontinental market. Using granular demand data for one-stop routes connecting airports in Europe with Asia and North America, we estimate regressions with multiple fixed effects to account for both time-invariant and time-varying factors that could confound the identification of policy effects. Our approach leverages variability in carbon prices in the European Union Emissions Trading System by comparing changes in routes subject to the policy (i.e., those involving European hubs) with routes unaffected by the policy (i.e., those involving non-European hubs). Our findings indicate that the carbon price variable is consistently negative and statistically significant across all regressions. A 100 % increase in the price of EU ETS allowances reduces passenger traffic through European hubs by 2–6 %. These results provide novel evidence of the policy's effectiveness in the long-haul market, while also highlighting the phenomenon of hub carbon leakage. Additionally, we find that joint ventures between European and non-European airlines mitigate the policy's impact.

© 2025 The Author(s). Published by Elsevier B.V.

Keywords: Carbon pricing; Aviation; European Union; Demand; Hub carbon leakage; Joint ventures

* Corresponding author. Tel.: +49-2203-601-1301; fax: +49-2203-601-14567.
E-mail address: katrin.oesingmann@dlr.de (K. Oesingmann)