THE FACTORS AFFECTING POLLUTION AND NOISE SOCIAL COSTS OF THE CURRENT AIRCRAFT FLEET: AN ECONOMETRIC ANALYSIS

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Abstract

In the last years, environmental issues have become increasingly relevant in the air transport industry. This exerts an influence on airline fleet choice as demonstrated by the fact that some carriers have begun to purchase more environmentally friendly aircrafts or to include environmental objectives into performance evaluation. This paper aims at analyzing the worldwide fleet by comparing the about 1400 existing (at year 2010) combinations of aircraft/engine models in terms of (1) noise, (2) local air pollution (LAP) and (3) CO_2 production. We consider factors affecting the environmental outcomes such as the aircraft age, size, category, aircraft/engine manufacturer. Our preliminary results, obtained by applying linear and SUR regression models, show that the "per seat" amount of noise, LAP and CO_2 are positively related to the age of the aircraft. Interestingly, the level of noise per seat (dB/seat) decreases with the size (measured as maximum takeoff weight) while the LAP and CO_2 increases. Among factors affecting noise and pollution we find also the aircraft category and both the aircraft and engine manufacturer. We also compute a total social cost for the LTO of each aircraft/engine combination in order to set a tariff level internalizing the social cost of each aircraft model.

KEYWORDS: aircraft noise and pollution, factors affecting externalities, aircraft/engine combination, environmentally friendly fleet.

CLASSIFICATION: Environmental Issues in Air Transport Industry, Air Transport Policy and Regulation, Airline Economics.