

CFAC – The Aviation Series

Edited by Prof. Dr. Roland Müller and Dr. Andreas Wittmer

Volume 21

Nico Egli

**Pricing for sustainability:
Analysing the demand-side
steering effect of a flight
ticket levy on young adults
in Switzerland**

DIKE 

Table of Contents

Abstract	III
Outline Contents	V
List of Abbreviations.....	XI
List of Tables.....	XIII
List of Figures	XV
1 Introduction	1
1.1 Research Objective.....	2
1.2 Structure	4
2 Literature Review.....	5
2.1 The Aviation Industry and Its Environmental Impact	5
2.2 Climate Policies in Aviation.....	7
2.2.1 Policy Approaches	7
2.2.2 Market-Based Policies	8
2.3 The Flight Ticket Levy in Switzerland.....	11
2.3.1 Terminology	11
2.3.2 Political Background.....	12
2.3.3 Environmental Effect	12
2.3.4 Advantages and Disadvantages of a Flight Ticket Levy in Switzerland	20
2.4 Determinants of Airport Choice.....	23
2.4.1 Access Time	23
2.4.2 Flight Frequency	24
2.4.3 Airfare	24
2.4.4 Flight Ticket Levy.....	25
2.4.5 Individual Factors	26
2.5 Summary and Derivation of Hypotheses	28
2.5.1 Summary	28
2.5.2 Hypotheses	29

Table of Contents

3 Methodology	33
3.1 Conjoint Analysis.....	33
3.2 Procedure.....	35
3.3 Attributes and Levels	36
3.3.1 Attributes.....	37
3.3.2 Levels.....	37
3.4 Study Design	40
3.4.1 Survey	40
3.4.2 Conjoint Analysis.....	41
3.5 Data Collection.....	43
3.6 Data Analysis	45
 4 Empirical Results	 49
4.1 Data Cleaning.....	49
4.2 Descriptive Results.....	50
4.2.1 Sociodemographics	50
4.2.2 Flight Behaviour	50
4.2.3 Environmental Attitude.....	52
4.3 Statistical Results	54
4.3.1 Aggregated Model Analysis.....	54
4.3.2 Segmentation Analysis.....	59
4.3.3 Share of Preference Analysis	60
4.4 Test of Hypotheses	66
4.4.1 Hypothesis 1: Main Direct Effects.....	66
4.4.2 Hypothesis 2: Main Relative Effects	71
4.4.3 Hypothesis 3: Indirect Effects.....	73

5 Discussion.....	77
5.1 Implications for Legal Authorities	80
5.2 Implications for Airport and Flight Operators	82
5.3 Limitations and Outlook	82
6 Conclusion.....	85
References	87
Appendix.....	95
Appendix A: Survey Screenshots.....	96
Appendix B: Interaction Analysis.....	118
Appendix C: Aggregated Logit Model Estimates	119

List of Tables

Table 1:	Overview of hypotheses (own illustration).	3
Table 2:	Scenarios concerning the steering effect of the flight ticket levy in Switzerland (Brülhart et al., 2020, pp. 5–7).	18
Table 3:	Choice-based conjoint analysis attributes and levels (own illustration).	38
Table 4:	Holdout sample test (own illustration).	55
Table 5:	Zero-centred aggregated hierarchical Bayes parameter estimates (own illustration).	56
Table 6:	Scenarios for the share of preference analysis (own illustration).	61
Table 7:	Share of preferences of the realistic scenarios (own illustration).	62
Table 8:	Share of preference of the scenarios with constant service levels (own illustration).	65
Table 9:	Significance of flight ticket levy utility values (own illustration).	67
Table 10:	Significance of access time utility values (own illustration).	68
Table 11:	Significance of airfare utility values (own illustration).	69
Table 12:	Significance of flight frequency utility values (own illustration).	70
Table 13:	Average importance of the attributes (own illustration).	72
Table 14:	Multivariate analysis of variances results for the segmentation by the annual number of flights (own illustration).	73
Table 15:	Multivariate analysis of variances results for the segmentation by annual household income (own illustration).	74
Table 16:	Multivariate analysis of variances results for the segmentation by environmental attitude (own illustration).	75

List of Figures

Figure 1:	Relation between the flight ticket levy and its environmental impact (own illustration).	13
Figure 2:	Steps in the choice-based conjoint analysis procedure (own illustration based on Backhaus et al., 2018, p. 501).	35
Figure 3:	Survey design (own illustration).	40
Figure 4:	Preferred travel mode for leisure trips of several days within Europe (own illustration).	50
Figure 5:	Annual flight frequencies of the participants (own illustration).	51
Figure 6:	Airports considered in the travel decision process (own illustration).	52
Figure 7:	Descriptive results regarding environmental attitude statements (own illustration).	53
Figure 8:	Average importance of the attributes (own illustration).	58
Figure 9:	Sensitivity analysis of price changes for Basel Airport and Zurich Airport (own illustration).	63
Figure 10:	Linear model coefficients of the attributes airfare and flight ticket levy (own illustration).	71
Figure 11:	Average utility comparison: environmental attitude (own illustration).	75