



Nico Egli

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

DIKE 

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

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Abstract

In June 2020, a majority of the Swiss parliament voted in favour of the introduction of a flight ticket levy as part of a revision of the federal law on greenhouse gas emissions (CO₂ law). The aim of this incentive tax was to reduce the demand for flights in Switzerland and thereby the CO₂ emissions generated by the commercial aviation sector. However, there is controversy as to the effectiveness of this measure, as critics have often argued that travellers would circumvent it by using foreign departure airports and thus generate more CO₂ emissions than before. Given that no research has considered the interaction between a flight ticket levy and such evasive behaviour in Switzerland, this study addresses this research gap. Through a choice-based conjoint analysis, this study examines the effect of the flight ticket levy on young Swiss adults' airport choice behaviour for short-haul economy class flights. The results indicate that introducing a flight ticket levy would only impact the choice of departure airport if it were to significantly exceed the planned level of CHF 30 in the short-haul context. Additionally, the study demonstrates that only a small number of Swiss passengers are likely to avoid the levy by using foreign airports. A flight ticket levy of CHF 120 in the context of this study would lead to a decrease in travelling passengers rather than to environmentally harmful evasive behaviour.

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1 Introduction

“CO₂ law: The flight ticket levy misses the mark.” (Schöchli, 2021)

The above headline of an article published in the *Neue Zürcher Zeitung* on 17 May 2021 clearly suggests that the planned flight ticket levy in Switzerland is doomed to fail. This is just one of many voices making themselves heard in the mobilisation against the federal law on greenhouse gas emissions (CO₂ law) in Switzerland. Among them is Switzerland’s national airline, Swiss. The airline states that Switzerland acting alone concerning the regulation of airline tickets makes neither ecological nor economic sense (Würzler, 2020). Their voices were heard, and the law was clearly rejected by the electorate in summer 2021. Nevertheless, many still view an incentive tax on airline tickets as a practical and necessary means of counteracting the increase in CO₂ emissions caused by aviation.

The current scientific literature reveals that despite a global pandemic, no natural decline in air travel is to be expected in the medium or long term (Araghi et al., 2014, p. 42; Fahey & Lee, 2016, p. 104). Global demand for air travel is growing so rapidly that technological advances can only compensate for a fraction of the additional greenhouse gas (GHG) emissions generated by aviation (Markham et al., 2018, p. 206). In Switzerland, aviation even accounts for 13.5% of annual nationwide CO₂ emissions and 11% of the total GHG emissions (Neu, 2021, p. 4). These figure are more than five times the international average (Feter, 2020). If Switzerland is to achieve its climate goal of zero net emissions by 2050 (Schweizerischer Bundesrat, 2019), action must be taken. This can be done via different policy approaches on an international or national level. At the international level, trading schemes such as the European Union’s Emission Trading Scheme (EU ETS) and the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) are particularly popular. While Switzerland participates in these initiatives, these efforts do not seem to be sufficient to counteract the increase in emissions on a large scale. Moreover, the political inertia of international negotiations on such concepts leads to many compromises and untapped potential (Larsson et al., 2019, p. 788). Accordingly, it is up to individual states to become involved and make an independent contribution to the decarbonisation of air transport. Flight ticket levies and taxes are particularly popular as a unilateral policy instrument

because they are both practically and politically easy to implement. Many EU states have already taken action to regulate the aviation industry in order to reduce emissions (European Commission, 2019, pp. 20–22). With the revision of the CO₂ law, Switzerland wanted to follow suit. Since the Swiss electorate rejected the CO₂ law, this initiative remains unsuccessful for the time being. However, with the steadily growing CO₂ emissions of Switzerland's commercial aviation industry (Bundesamt für Statistik, 2021a, p. 20), regulation of the industry will continue to be an important issue in the context of Swiss climate policy. A detailed data foundation on the effectiveness of different regulatory approaches will therefore be of great importance for the legislator in order to be able to work out majority-supported solutions.

Flight ticket levies generate revenue for the state, which can be invested in, for example, environmentally friendly projects, and they create incentives for people to fly less. In Switzerland, the focus is on the second effect. While the perception of the flight ticket levy was initially very positive, critics soon noted that the tax would put unnecessary pressure on already financially weakened airlines by causing them to lose customers. They also observed that it is to be expected that many air passengers will depart from airports in nearby countries and cause even more emissions than before due to the additional travel distance covered as a result of a longer journey to the departure airport. While international studies have been conducted on the effectiveness of flight ticket taxes and levies, most of them are difficult to transfer to the Swiss context, as the air travel market is strongly influenced by regional characteristics (InterVISTAS Consulting Inc., 2007, p. III). Accordingly, this study aims to contribute to the collection of initial data for the assessment of such a policy measure in Switzerland and thus provide a first basis for future political discussion on how to effectively handle the growing CO₂ emissions generated by the Swiss aviation industry.

1.1 Research Objective

This study analyses the impact of a flight ticket levy on the demand for flights in Switzerland. Special focus is placed on evasive behaviour of travellers trying to avoid the levy by departing from foreign airports. To cover these two topics, the following research question is formulated:

2 Literature Review

This chapter provides the basis for a deeper understanding of the steering effect of a flight ticket levy and choice behaviour regarding airports.

2.1 The Aviation Industry and Its Environmental Impact

The ability to travel by air is associated with many opportunities for both individuals and businesses. For example, international tourism relies on air passengers for 58% of the arrivals at the destination (Gössling, 2020, p. 1). The relevance of air travel in general is reflected in the demand for flights, which has been increasing for several decades (Ragbir et al., 2021, p. 1). In 2018, the International Air Transport Association (IATA) predicted that passenger volumes would double within the next two decades, reaching 8.2 billion air travellers in 2037 (IATA, 2018). The only recent dampener on this continuous growth was the global COVID-19 pandemic that emerged in 2020 (IATA, 2021). Nevertheless, according to the IATA, passenger growth is expected to return to prepandemic levels by 2023 (Pearce, 2021, p. 10).

However, air travel is also associated with risks, one of the greatest of which is its impact on the environment. Human emissions of CO₂ and other GHGs are the primary factor behind the ongoing global temperature increase (Matthews et al., 2014, p. 1). Projections show that the associated climate change could have an irreversible impact on global ecosystems by causing changes in terms of extreme weather patterns, rising sea levels, and marine acidification. These developments may in turn have a massive negative impact on global welfare “by an amount equivalent to a reduction in per capita consumption of up to 20%, now and forever” (MacKerron et al., 2009, p. 1372). The aviation industry contributes significantly to this effect by accounting for 2 to 3% of global GHGs (Gössling, 2020, p. 2; Rice et al., 2020, p. 1) and 2.8% of global CO₂ emissions (Teter, 2020). Despite continuous improvements in technology in the aviation industry such as more efficient aircraft and sustainable fuels, the expected growth in air traffic is likely to lead to increasing emissions in the future (Araghi et al., 2014, p. 42; Fahey & Lee, 2016, p. 104). One explanation for this is that the demand growth for air travel outpaces the rate of adoption

3 Methodology

As mentioned in Section 1, this study is intended to make an empirical contribution to a better understanding of the airport choice behaviour of Swiss people in the context of a flight ticket levy. For this purpose, a quantitative method of multivariate preference measurement is used, namely conjoint analysis (CA). This chapter describes the methodology behind this research process.

3.1 Conjoint Analysis

Since the 1970s, CA has become increasingly relevant as a research method in market research and psychology (Baier & Brusch, 2009a, p. 5). Initially, researchers mainly used it to analyse consumer goods, but it is now increasingly used in other areas (Baier & Brusch, 2009a, p. 8; Weiber & Mühlhaus, 2009, p. 43). For example, it has gained considerable relevance in the airline industry in recent years, especially in analysing travellers' choice behaviour (Hergesell, 2017, p. 600; Zhou et al., 2020, p. 188). The reason for this increased use is the ability of the method to replicate realistic choice situations (Haaijer et al., 2001, p. 93). Thus, CA leads to more valid results than a direct survey when implemented correctly (Weiber & Mühlhaus, 2009, p. 48). It is a standard method for determining the preferences of individuals or groups of people (Baier & Brusch, 2009a, p. 3). As a decompositional method, it derives the importance of specific properties (attributes) and property characteristics (attribute levels) for preference formation from empirically collected overall judgements, namely preferences for products. When buying a car, for example, a preference-forming attribute could be the colour of the car. Colour would accordingly be defined as an attribute. Different properties of colour could include blue and red which would thus be called attribute levels. The decompositional process is conducted by breaking down the overall judgement of a participant into its components using analytical methods. These components are called part-worth utilities or part-worths and constitute the basis for the comparison and analysis of different product attributes (Backhaus et al., 2015, p. 176).

The term CA covers a broad group of process variants (Weiber & Mühlhaus, 2009, p. 43). Specifically, four types of CA can be distinguished: traditional

4 Empirical Results

Following the description of the methodology used to gather and analyse relevant data in the previous section, this section describes the results of the data analysis.

4.1 Data Cleaning

In total, 343 people clicked on the link to the survey over the course of two weeks. Fifty-three did not complete the survey, as they did not reach the termination page, whereas 290 of the participants reached the termination page. However, three participants abandoned the survey on the penultimate page, where they were only asked to enter the competition. These fields are not required or relevant to the study. Therefore, they were still considered for the data analysis. A total of 293 participants who completed the survey remained. Some of the participants who reached the dropout page were filtered out directly using the programmed logic in the filter questions. The target group for the study was only people who lived in Switzerland and had taken a short-haul flight within the last 36 months. Therefore, the following persons were automatically filtered out: 49 participants were not residents of Switzerland, and 59 participants had not flown within the last 36 months. However, there was overlap between the two groups: 21 were not Swiss and had not flown in the last 36 months. Thirty-eight participants had not flown but are Swiss. Twenty-eight participants had flown but are not Swiss. Thus, a total of 87 additional participants were filtered out of the survey and moved directly to the dropout page. In addition, four participants did not answer the control question correctly and were therefore filtered out. After cleaning the dataset, a total of 202 valid participants remained.

In order to select the correct sample when analysing the data within Lighthouse Studio, a corresponding “Respondent Filter” was inserted with the specifications “`sys_DataSource < 4 AND Q23 = 1`”.

5 Discussion

After describing the empirical results in Section 4, this section discusses the results and outlines practical implications, limitations of this study, and potential starting points for future research.

First, H1a to H1d show that key findings from existing research regarding the main determinants influencing the choice of airport also hold in Switzerland: It can be concluded that the attributes access time, airfare, and flight ticket levy are relevant choice criteria for Swiss air travellers in the short-haul context. However, this assumption could not be substantiated for flight frequency. One reason for this could be possible ambivalence concerning the understanding of the term and the associated advantages for passengers. This problem was described in detail in Section 2.4.2. Another reason could be that flight frequency is less relevant in the context of leisure travel than for business travel (see Section 2.4.5). This is the case because flexibility and time pressure play a minor role in the former. Additionally, this effect is possibly strengthened by the fact that the present sample largely consists of young people and students, who are likely more flexible due to having fewer personal and professional obligations than older people.

The acceptance of the subhypothesis H2a leads to the conclusion that the flight ticket levy is relatively less important than airfare with regard to airport choice in a short-haul context. Moreover, the analysis shows that changes of the same amount in airfare and flight ticket levy lead to different changes in the average utility of a choice alternative. This finding indicates that the two attributes are evaluated independently by the study participants, despite the fact that they are both based on monetary costs. This indication is also supported by the fact that no relevant interaction effect between the two variables was found. Furthermore, these results are consistent with those of Sonnenschein and Smedby (2019, p. 655), who found that travellers are willing to pay an additional price for a flight ticket levy exceeding their willingness to pay for the airfare. However, the study design might have influenced the perception of the two attributes by showing them as two different prices, when in a real purchasing situation, they might be represented as different components of one flight ticket price.

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The aviation industry is responsible for a large proportion of CO₂ emissions in Switzerland. For this reason, the Swiss parliament planned to introduce a flight ticket levy, with the aim of reducing the demand for flights in Switzerland and thus the CO₂ emissions of commercial aviation. However, critics have often argued that travellers would circumvent this measure by using foreign departure airports. Through a choice-based conjoint analysis, this study analyses the effect of a flight ticket levy on the airport choice behaviour of Swiss citizens for short-haul flights. The study demonstrates that a flight ticket levy as it has been planned by the Swiss government would only marginally influence the demand behaviour of Swiss citizens. A flight ticket levy of a sufficient amount would rather lead to a decrease in passengers than to environmentally harmful evasive behaviour.



