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Distributional Effects of Energy Policy Instruments: Perception and Preferences

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Zusammenfassung

Das Projekt analysiert die wahrgenommene Fairness von Lenkungsabgaben im Energiebereich durch die Schweizer Stimmbevölkerung. Es wird untersucht, wie die Verteilungsgerechtigkeit von CO_2-Abgaben beurteilt wird. Im Zentrum stehen CO_2-Abgaben auf Treib- und Brennstoff sowie Kerosin. Zur Analyse werden quantitative und qualitative Methoden angewendet. In einer ersten Bevölkerungsbefragung werden einerseits verschiedene normative Vorstellungen von Verteilungsgerechtigkeit erhoben. Andererseits wird experimentell untersucht, welchen Einfluss die ökonomischen Verteilungseffekte sowie die Ungleichheitsaversion auf die Wahrnehmung der Fairness haben. In einer zweiten Bevölkerungsbefragung wird der Einfluss von Information und Kommunikation auf die Wahrnehmung der Fairness experimentell untersucht. Beide Befragungen zielen darauf ab, Subgruppen der Bevölkerung zu identifizieren, welche ein ähnliches Wahrnehmungsmuster aufweisen. Nach den quantitativen Befragungen werden Fokusgruppen und Workshops durchgeführt, um die Ergebnisse zu validieren und Erkenntnisse für die Weiterentwicklung der Energiepolitik zu identifizieren. Das Projekt befindet sich im Übergang von der Konzept- in die Umsetzungsphase. Die erste Bevölkerungsbefragung ist vorbereitet und startet im ersten Quartal 2024.

Résumé

Le projet analyse la perception d'équité des taxes incitatives par la population votante suisse dans le domaine de l'énergie. Il s'agit d'examiner comment l'équité de la répartition des taxes sur le CO_2 est évaluée. Une attention particulière est portée sur les taxes sur le CO_2 prélevées sur les carburants, les combustibles ainsi que sur le kérosène. Pour ce faire, des méthodes quantitatives et qualitatives seront employées. Dans un premier sondage quantitatif auprès de la population, différentes conceptions normatives d'une répartition équitable seront recensées. Par ailleurs sera évaluée, expérimentalement, l'influence des effets de répartition économique et de l'aversion de l'inégalité sur la perception d'équité. Dans un deuxième sondage quantitatif auprès de la population, l'influence de l'information et de la communication sur la perception d'équité sera évaluée expérimentalement. Les deux sondages visent à identifier des sous-groupes qui présentent un même modèle de perception. **À la suite des** sondages quantitatifs, des groupes focus et des workshops seront menés dans le but de valider ces résultats et de tirer des enseignements pour le développement de la politique énergétique. Le projet se trouve au passage de la phase de conception à la phase de mise en œuvre. Le premier sondage est prêt et débutera au premier trimestre 2024.

Summary

The project analyses how the Swiss population perceives the fairness of steering taxes in the energy sector. Foremost, it examines how distributional effects of carbon taxes are perceived. It focuses on carbon taxes on heating and transport fuel as well as kerosine. To that end, quantitative and qualitative methods are employed. In a first population survey, on the one hand, perceptions on distributional justice norms are elicited. On the other hand, the impact of distributional effects on the perception of fairness is measured experimentally. In the second population survey, the impact of information and know-how on the perception of fairness is analysed in a survey experiment. Both surveys aim to identify sub-groups within the population, who exhibit a similar perception pattern. After the quantitative survey, there will be focus groups and workshops to validate results and provide conclusions for the energy policy's advancement. The project is currently between the concept and its implementation phase. The first population survey is fully prepared and will be deployed in the first quarter of 2024.

Contents

Abbreviations

FSO	Federal Statistical Office
FSE	Factorial Survey Experiment
DCE	Discrete Choice Experiment

1 Introduction

1.1 Background information and current situation

In 2019, the Federal Council decided to aim for net-zero greenhouse gas emissions by 2050. Theoretically, a possible pathway to reduce emissions nationally is by introducing carbon taxes on emitting behavior (Landis et al. 2019; Thalmann and Vielle 2019). Whereas, the instrument of carbon taxes is said to be economically efficient (Stadelmann-Steffen and Dermont 2018), it shows low levels of popular support (Levi 2021) and has only been implemented for heating fuel in Switzerland (Thalmann and Vielle 2019). In 2021, the Swiss voting population has declined a law, which would have introduced a carbon tax on transport fuel and a fee on air travel.[1] There has been much empirical work done on the political acceptance of carbon tax (Carattini, Kallbekken, and Orlov 2019; Fremstad et al. 2022; Kaiser, Gerdes, and König 2023; Mildenberger et al. 2022; Stadelmann-Steffen et al. 2018; Thalmann 2004). More recently, researcher analyzed the role of fairness perception on the acceptance of carbon taxes (Bergquist et al. 2022; Maestre-Andrés, Drews, and van den Bergh 2019; Sommer, Mattauch, and Pahle 2022). However, how, when and if carbon taxes are perceived (un-)fair has to our knowledge not been extensively studied in the context of Switzerland. Moreover, no study has positioned the perceived fairness of carbon taxes' distributional impact at the centre of their analyses, albeit Sommer, Mattauch and Pahle (2022) did so conceptually.

1.2 Purpose of the project

Our project delves into this research gap. It aims to explore the ways in which the Swiss population perceives carbon taxes from a fairness perspective. As carbon taxes cause transfers of economic means among the population, we can ask how these distributional effects are evaluated. Our strategy to do so is threefold: Firstly, we assume, that individuals hold different normative concepts on how burdens and benefits should be distributed in a just manner (Hülle, Liebig, and May 2018). We will trace these normative concepts in the population. Conceptually, we base our analysis on the classic "triumvirate of tenets" of energy justice research (McCauley et al. 2013): The concepts held by the population will be distinguished according the three justice tenets distributional and procedural justice as well as justice in recognition (Bal et al. 2023; Jenkins et al. 2016; Sovacool et al. 2016; Sovacool and Dworkin 2015). Secondly, we will investigate the effect of inequality aversion on the perception of fairness (Fehr and Schmidt 1999; Lü and Scheve 2016; Sommer, Mattauch, and Pahle 2022). Specifically, we will address, how different hypothetical carbon taxes are perceived from a standpoint of fairness when presenting the economic distributional effects of two model households. Thirdly, we analyse the role of information and knowledge on the perception of fairness of the taxes (Fremstad et al. 2022; Stadelmann-Steffen, Bürgisser, and Armingeon 2022; Stantcheva 2021).
Academically, these three-pronged strategy will result in three articles published in journals on energy policy. From the standpoint of a policy maker, the results will lead to a better understanding of how energy policy is perceived by the population and so contribute to the national goal of net-zero emissions by 2050.

[1] The Federal Council (2021): CO_2 Act, https://www.admin.ch/gov/en/start/documentation/votes/20210613/co2-act.html, last accessed: 12.10.2023

1.3 Objectives

The project analyses the following research questions:

1. What types of fairness notions can be distinguished and how can they be related to carbon taxes?
2. How do economic distributional effects and inequality aversion affect the fairness perception of carbon taxes?
3. How do the perceptions of fairness differ among the population? Are there groups within the population that show similar perception patterns?
4. How does communication and information affect the perception of fairness of carbon taxes.

2 Description of facility

Not applicable

3 Procedures and methodology

The project uses state-of-the art survey methodology to analyze the perception of fairness. We gained access to a novel sample of the Swiss voting population (n ~ 12'000), which is solely contacted for the purpose of this project. The sample is split in half. Each half fills out one survey. Each survey contains one survey experiment.

In order to analyze the *normative concepts of justice*, we will base our analysis on the triumvirate of tenets laid out by McCauley et al. (2013), which has been used widely in the energy justice literature (Jenkins et al. 2016, 2020; McCauley et al. 2013; Sovacool and Dworkin 2015). The triumvirate consists of the three tenets: distributional justice, procedural justice, and justice as recognition. Each of these tenets can further be distinguished according to different specifications. Firstly, a distribution can be just if it achieves equality, or benefits the needy, or distributes burdens and benefits according to proportional effort (Hülle, Liebig, and May 2018; Sommer, Mattauch, and Pahle 2022). Secondly, a procedure is just, if people have adequate information, can voice their control in the process and on the decisions taken (Bal et al. 2023; Colquitt 2001). Thirdly, justice as recognition means the recognizing of different positions of members of an energy society and recognizing their individual contribution potential (Agusdinata et al. 2023; Bal et al. 2023; Demski et al. 2019). We present our respondents in both surveys with statements on carbon taxes aligned with these specifications. By asking our respondents how they agree with the statements, we can elicit their normative preferences for the three justice tenets.

To elicit the role of *inequality aversion* on the perception of fairness, we will conduct a Factorial Survey Experiment (FSE) following Auspurg and Hinz (2014). We will make use of the classic Fehr-Schmidt-framework for studying the effect of inequality aversion on the utility of an outcome (Fehr and Schmidt 1999). Specifically, we will present our survey respondents with vignettes describing hypothetical carbon taxes. The description entails monetary outcomes for two model households. The estimation of these monetary outcomes is based on assumptions made by Siegrist, Iten and Zimmermann (2019). The respondents will answer a set of individual questions, which allows us to estimate their specific monetary outcome as a function of the presented taxes. Our dependent variable is the fairness rating of each presented vignette. Our variable of interest is (dis-)advantaged inequality aversion (Fehr and Schmidt 1999). The Fehr-Schmidt-framework has already been used in survey on tax acceptance (Lü and Scheve 2016).

In order to analyze the effect of *knowledge and information* on the fairness perception, we will conduct a Discrete-Choice Experiment (DCE) in the second survey (Ben-Akiva, McFadden, and Train 2019). In the DCE, our respondents receive hypothetical carbon taxes and are asked to choose the fairer alternative. We experimentally control the level of information, respondents receive. This allows us to measure how different means and levels of communication/information will affect the perception of fairness.

Both experimental methods (FSE and DCE) have been shown to be able to elicit fairness preferences (Hainmueller, Hangartner, and Yamamoto 2015; Liebe and Dobers 2020; Liebig, Sauer, and Friedhoff 2015).

4 Activities and results

In the last year, there have been progress in multiple working packages:

1. Working Package 1: Start phase and literature analysis
   Working package 1 has been successfully completed. The steering group has been assembled. The PhD student has begun his work at the university. The relevant literature has been collected and analyzed. The project can build on literature in the fields of energy policy, environmental economics, survey methodology and philosophy. The literature catalogue currently contains over 300 papers, reports, and other scientific texts.
2. Working Package 2: Survey 1

   The concept and implementation of survey 1 has been successfully planned. Based on the research questions, survey 1 was designed to elicit the normative preferences of the Swiss voting population. Additionally, the FSE has been designed and implemented. The design and functioning of survey 1 have been qualitatively tested with a diverse group of people. By the time of writing this report, survey 1 has further been pre-tested on a professional survey firm's panel. Moreover, in collaboration with the Federal Statistics Office (FSO), the project has been able to gain access to a novel sample of the Swiss population. This sample will be contacted by mail and invited to participate in the survey. Survey 1 will start in the first quarter of 2024.
3. Working Package 3: Survey 2

   Survey 2 has been conceptually sketched. Moreover, the project gained access to a novel sample of the Swiss voting population through the FSO. Survey 2 will start in the fourth quarter of 2024.
4. Working Package 4: Validation of Results

   No activities recorded.
5. Working Package 5: Monitoring

   In March 2023, the steering group met the project team for the first time and discussed possible ventures of the project (see protocol in the appendix). Furthermore, the members of the steering group gave their feedback on the questionnaire draft of survey 1. The next steering group meeting will be held after the results of survey 1 are recorded.
6. Working Package 6: Scientific Exchange

   The PhD student attended several congresses (Swiss Social Science and Humanities Energy Research Group, SWEET EDGE Biennial Conference) this year, where he could network with researchers from other universities and other projects. Moreover, by attending the summer school at the Research and Expertise Centre for Survey Methodology, he was able to improve his methodological skills.

7. Working Package 7: Project End

   No activities recorded.

5 Evaluation of results to date

Survey 1 has been successfully planned. Due to unforeseen delays in the access to the addresses, survey 1 will not be started at the end of 2023, as originally planned, but will be postponed into the first quarter of 2024. There are no further delays in the project planning to be expected.

6 Next steps

In the following year, we will complete working package 2 and 3. Specifically, we will conduct the two population surveys. The results of survey 1 will be analyzed in year 2024. The results of survey 2 are expected to be analyzed in 2025.

7 National and international cooperation

We have made several cooperative advances with major national research projects. Firstly, we discussed our approach and research concept with Prof. Lena Schaffer (University Lucerne). She recently completed her research project “Beyond Policy Adoption”, analyzing energy policy responses on parties and the population. Secondly, Isabelle Stadelmann-Steffen (University Berne) is not only a member of the steering committee but has moreover been instrumental in designing the questionnaire for the first survey and is regarded as a leading scholar in the field of Swiss energy policy. Thirdly, we also aim to establish closer cooperation with projects within the same funding program. Most notably, Prof. Doina Radulescu heads a project “Distribution of energy related living expenditures and likelihood of living in polluted areas: An analysis using European-wide household survey data”. With this project, we aim to generate valuable synergies in calculating distributional effects. Secondly, Philippe Thalmann and Andrea Baranzini analyze possible policy mixes for full decarbonization by 2050. We strive for complementing their research on feasibility and acceptance of energy policy mixes.

8 Communication

Not applicable

9 Publications

Not applicable

10 References

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11 Appendix

Not applicable