



On self-interested preferences for burden sharing rules: An econometric analysis for the costs of energy policy measures

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ABSTRACT

This paper examines the acceptance of burden sharing rules that refer to the costs of the German energy transition, which is one of the most challenging and disputed national climate and energy policy measures. Based on data from a comprehensive survey of more than 2200 citizens, the empirical analysis reveals that the polluter-pays rule has by far the highest support compared with the ability-to-pay rule and especially compared with the equal-pay rule, which is widely refused in the sample. Since the distribution of the costs of the German energy transition is largely in line with a polluter-pays rule, its strong support seems to contribute to the high acceptance of the energy transition at all. The main result of our econometric analysis with multivariate binary and ordered probit models is that not only some attitudinal factors like environmental values and political identification, but especially economic self-interest is relevant since (equivalent) energy expenditures have a significantly negative effect on the support of the polluter-pays rule and especially (equivalent) income has a significantly negative effect on the preference for the ability-to-pay rule. These results suggest that the use of distributional arguments for the criticism of energy policy measures is not necessarily value-driven on the basis of real perceptions of distributive justice, but can also be strategically motivated to prevent and combat economically unfavorable measures. Together with the strong general support of the polluter-pays rule, these results suggest that a sharp reorientation of the German energy transition due to distributional arguments is not very useful.

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1. Introduction

According to the Paris Agreement 2015 within the United Nations Framework Convention on Climate Change (UNFCCC), each country sets a target for the reduction of greenhouse gas emissions. On this basis, the main challenge for national governments is the translation of targets into regulations such as the EU Emissions Trading System (EU ETS) at the European level. However, the successful implementation of climate policy measures generally requires their public support (e.g. Kallbekken and Sælen, 2011; Gampfer, 2014), which obviously strongly depends on the policy type. For example, non-coercive climate policy measures such as subsidies mostly receive a high acceptance, whereas emission trading systems and especially carbon taxes are less supported, although they are highly favored by economists due to their cost efficiency (e.g. Hammar and Jagers, 2007; Rhodes et al., 2017). In line with several (stated preferences) studies on the individual support of domestic climate policy measures, which reveal the general

relevance of their costs (e.g. Dietz and Atkinson, 2010; Sælen and Kallbekken, 2011; Brännlund and Persson, 2012; Shin et al., 2014; Gevrek and Uyduranoglu, 2015; Ščasný et al., 2017; Carratini et al., 2017), an important reason for the overall limited support of carbon taxes seems to be that they lead to direct financial burdens for the households (e.g. Drews and van den Bergh, 2016).

However, while actual costs certainly play an important role for the acceptance of climate policy measures, subjective perceptions about their costs and effectiveness as well as other attitudinal factors (e.g. personal values and norms) are also highly relevant (e.g. Ziegler, 2017a, 2017b). Based on data from a comprehensive survey of citizens, this paper empirically examines an additional important factor for the support of costly climate policy measures, i.e. distributional perceptions (e.g. Drews and van den Bergh, 2016). It can be expected that climate policy measures are only accepted if the distribution of their costs between households is perceived to be fair (e.g. Heindl et al., 2014). However, perceptions about a fair burden sharing across citizens can be based on very different principles like the polluter-pays rule (i.e. the rule of an equal ratio between individual contributions to climate change and individual financial contributions to the costs of the climate policy measure), the ability-to-pay rule (i.e. the rule of an equal ratio between individual financial ability and individual financial contributions

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to the costs of the climate policy measure), or the equal-pay rule (i.e. the rule of equal individual financial contributions to the costs of the climate policy measure).¹

In contrast to previous studies on preferences of citizens for burden sharing rules (e.g. Dietz and Atkinson, 2010; Gevrek and Uyduranoglu, 2015), which examine hypothetical or unspecified climate policy measures, our empirical analysis specifically refers to the German energy transition (“Energiewende”) toward renewable energies (e.g. Strunz, 2014), i.e. an existing and widely well-known climate policy measure that comprises a series of regulations and that is one of the most challenging and disputed instrument in Europe and also worldwide. This consideration is able to reduce possible hypothetical biases in previous studies and thus to increase the external validity of the empirical results. Two main components of the German energy transition are the nuclear phase-out and the financial support of the expansion of renewable energies through the Renewable Energy Sources Act (Erneuerbare-Energien-Gesetz, EEG) (e.g. Frondel et al., 2015). Due to the relevance of the former measure, the German energy transition is not exclusively a climate policy measure, although the reduction of greenhouse gas emissions is still a main objective (e.g. BMWi, 2014). The EEG provides feed-in tariffs for the generation of renewable electricity, which are recently no longer set by the government, but by an auction system.

The costs that are induced by the EEG have to be borne by many firms and especially by households since they are directly passed through to the electricity prices. The money amounts which are reallocated according to the EEG mechanism are huge. For example, the estimated EEG payments in 2017 amount to 25.7 billion Euro (e.g. BDEW, 2017). While the energy transition in total, but also their two core measures are supported by the majority of German citizens (e.g. Andor et al., 2016), their high costs are seen as a key problem by more than a quarter of the citizens (e.g. BDEW, 2016). The main basis for the public criticism of the energy transition (in the political arena e.g. by the Liberal Democratic Party, FDP, or the main right-wing party, AfD) is the feed-in tariff system. Recently, this criticism is increasingly justified by the argument that the distribution of the costs of the energy transition is socially unfair (e.g. Heindl et al., 2014) and can even lead to the risk of energy poverty for low-income households (e.g. Frondel et al., 2015; Heindl, 2015). However, it is not clear whether the proponents of this criticism are really worried about the social consequences of the energy transition, which contradicts their real perception of distributive justice, or whether the arguments are strategically used due to economic self-interest.

Our empirical analysis shows a clear order for the support of burden sharing, i.e. the polluter-pays rule has the highest general acceptance (nearly 80%), whereas the equal-pay rule has the lowest acceptance (about 16%). The strong support of the polluter-pays rule seems to contribute to the high acceptance of the German energy transition since the cost distribution is mainly based on this burden sharing rule, but is in contrast to the widespread perception that the cost distribution is generally unfair. Our econometric analysis with multivariate binary and ordered probit models reveals that environmental values are significantly positively correlated with preferences for the polluter-pays rule and identifications with socially, conservatively, and liberally oriented policies exhibit additional significant correlations. However, the main result is the relevance of economic self-interest since (equivalent) energy expenditures have a significantly negative effect on the support of the polluter-pays rule and (equivalent) income has a significantly negative effect on the preference for the ability-to-pay rule. This suggests that the use of distributional arguments for the criticism of energy policy measures can be strategically motivated to prevent and combat economically unfavorable measures.

¹ Such rules are especially discussed for the burden sharing of costs across countries in international climate agreements (e.g. Lange et al., 2007, 2010; Schleich et al., 2016; Kesternich et al., 2014; Tørstad and Sælen, 2018).

The remainder of the paper is organized as follows: Section 2 discusses the related literature and the contributions of our study. Section 3 presents the data and variables in our empirical analysis and outlines their expected correlations with the support of burden sharing rules. Section 4 reports descriptive statistics, explains the econometric approaches, and discusses the estimation results. Section 5 draws conclusions.

2. Literature review and contributions

Previous studies have already examined preferences for burden sharing rules in climate policy. However, many of them refer to the burden sharing of costs across countries in international climate agreements. For example, Tørstad and Sælen (2018) use a content analysis to count the references by countries and negotiating groups (e.g. the European Union) to the three burden sharing rules in submissions during negotiations between 2012 and 2015.² They show that the ability-to-pay rule and especially the polluter-pays rule³ are the most widely used burden sharing mechanisms and that Annex I countries have a significantly higher preference for the ability-to-pay rule, which can be explained by economic self-interest.⁴ Furthermore, the empirical analyses of Lange et al. (2007, 2010) and Kesternich et al. (2014) are based on individual data from agents involved in international climate negotiations and also reveal the general preference for the polluter-pays rule. Another group of studies is based on individual data from different countries at the citizen level. While Schleich et al. (2016) clearly confirm a strong support of the polluter-pays rule, the results in Carlsson et al. (2011, 2013), Bechtel and Scheve (2013), Gampfer (2014), Brick and Visser (2015), and Ščasný et al. (2017) are less clear-cut. Similar to Tørstad and Sælen (2018), a key result of some studies is that perceptions about distributive justice can be influenced by economic self-interest (see also e.g. Brekke and Johansson-Stenman, 2008), i.e. burden sharing rules that lead to lower costs for the own countries are often preferred (e.g. Lange et al., 2007, 2010; Carlsson et al., 2013; Kesternich et al., 2014; Brick and Visser, 2015). In contrast, Carlsson et al. (2011) and Schleich et al. (2016) do not find self-interested preferences for burden sharing rules.

With respect to the domestic burden sharing of costs between households⁵ for national climate policy measures, Hammar and Jagers (2007) report that a specific type of the polluter-pays rule has the strongest support in Sweden. Furthermore, they show that perceptions about burden sharing rules as well as economic self-interest (measured by the frequency of car use) play an important role for the acceptance of a specific type of policy, i.e. a CO₂ tax on gasoline and diesel. Based on citizen data from stated choice experiments, the empirical studies of Ščasný et al. (2017) for the Czech Republic, the UK, and Poland, and of Brännlund and Persson (2012) for Sweden confirm the high acceptance of the polluter-pays rule for the burden sharing of costs for unspecified domestic climate policy measures. The latter study additionally reveals a high preference for a progressive distribution of hypothetical policy costs, i.e. a specific type of the ability-to-pay rule. Strong preferences for progressive designs that refer to revenue recycling can also be

² This study argues that the bottom-up framework of the Paris Agreement on the basis of voluntary national pledges results from a lack of consensus on burden sharing rules and thus marks a fundamental shift from the Kyoto Protocol comprising internationally agreed national commitments.

³ The study uses the terms “capability” and “responsibility” instead of “ability-to-pay rule” and “polluter-pays rule”, which is in line with some other studies (e.g. Underdal and Wei, 2015).

⁴ This result is in line with Castro et al. (2014) who show that the Annex division of countries in the history of the UNFCCC conferences has strongly influenced the negotiation behavior in the past.

⁵ Another interesting direction of research refers to the analysis of the burden sharing between industry and households, which is, for example, recently examined in Andor et al. (2018). They show that the willingness to pay of households for the expansion of renewable energies can be increased by removing rebates for energy-intensive industries that strongly contradict the polluter-pays rule.

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