

Task 6.2

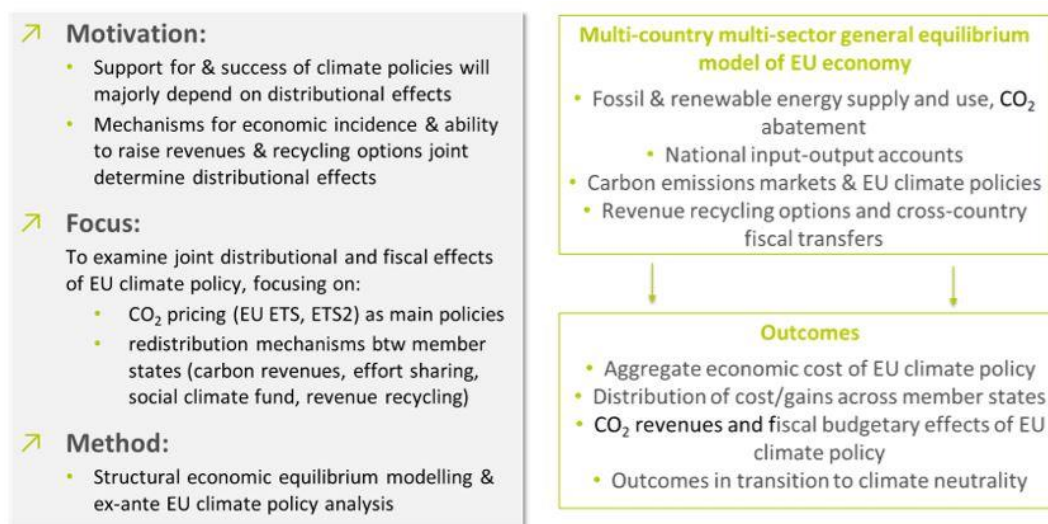
Fiscal and distributional effects of climate policy

Leader: ZEW, Contributor: IBS

1. Task description

This task will analyse the interaction of the welfare state and climate policy design through the public budget. Carbon pricing policies create income, technology standards are revenue neutral, and policies involving subsidies need to be refinanced. We use a multi-sector computable general equilibrium of the EU developed under Task 4.6 to study the impacts of climate policies on the public budget. We are particularly interested in the role of income from carbon pricing to counteract unintended distributional consequences of climate policy. For this, we simulate and analyse different revenue recycling schemes including reduction of labour taxes and lumpsum per-capita transfers.

Figure 1. Overview of Task 6.2



2. Background / Setting

Decarbonizing European economies in line with the now binding climate targets agreed by the European Parliament and EU member states under the European Green Deal—reducing greenhouse gas emissions by at least 55% from 1990 levels by 2030 and achieving a net-zero emission by the mid-century—will require

unprecedented structural change, fundamentally altering the way energy services are supplied and demanded. Reducing and largely eliminating the dependence on fossil fuels will therefore have profound impacts on the entire economic system and on a wide range of different actors (e.g., consumers, households, firms, sectors, countries). The support for and success of public climate policies that underpin the transition to climate neutrality will depend critically on how the costs and benefits of decarbonization will be distributed among these various actors (Deryugina et al., 2019).

Importantly, the overall economic incidence of different climate policy instruments is also shaped by their fiscal effects. For example, price-based climate policies such as carbon taxes or emissions trading (i.e., the leading policy instrument for decarbonization in the EU) raise substantial fiscal revenues which can be used to address unintended distributional consequences, finance green investments or other government programs. In contrast, technology policies such as emissions standards, energy efficiency standards, renewable energy subsidies, which are important regulatory measures in the EU climate policy mix, tend to be revenue-neutral or involve (explicit or implicit) subsidies which create costs for the public budget.

It is thus important to understand the joint fiscal and distributional effects in EU climate policy to identify politically viable, economically efficient, and socially equitable policy measures that promote deep decarbonization.

3. State-of-the-art

Our current understanding of the distributional effects of climate action stems predominantly from analyses that focus narrowly on "direct" impact channels and do not consider the "system-wide" or "indirect" impacts. Prominent examples include sectoral case studies, single-country assessments, or work that focuses on the expenditure side of households ("price effects") and ignores capital and labour income and cross-market effects. Clearly, to the extent that the transition to climate neutrality will transform large parts of Europe's highly interconnected, multi-sectoral economies, these "indirect" distributional effects are of first-order importance to obtain a comprehensive assessment on which future policy actions can be based. Examples include for carbon pricing or emissions trading policies (Poterba; 1989; Rausch and Schwarz, 2016), for technology policy (Davis and Knittel, 2019), or other climate-related public policy interventions (Reguant, 2019). The revenue usage option, including the shadow costs of public funds, and the broader fiscal dimension of climate policies, however, is often ignored (Barrage, 2017).

4. Advancement compared to the state of the art and research to be done

We will provide the first study which uses ex-ante policy analysis to examine (1) the fiscal revenues raised under EU carbon pricing including the existing EU Emissions Trading System (ETS) and the new emission trading system for buildings and transportation (ETS2) while (2) considering the joint distributional effects across and with-in EU Member states under alternative revenue recycling options which (i) either closely represent current legislation (i.e., redistribution rules under EU ETS, ETS2, the effort sharing agreement, and the Social Climate Fund) or (ii) consider alternative revenue recycling options through lowering (distortionary) labour and capital income taxes (“green tax reform”).

We will pay close attention to how the level of tax revenues will evolve as policy stringency increases in the transition to carbon neutrality. The hypothesis is that carbon revenues will initially rise to a certain point, after which the "tax base," i.e., carbon emissions, will shrink too quickly to sustain growing tax revenues from carbon pricing (similar to the "Laffer Curve" argument). These dynamics on the fiscal side will critically affect the ability of public policy to offset unintended distributional consequences.

5. Methodology

We will develop and apply ex-ante simulation analysis based on general equilibrium modeling to conduct positive and normative welfare analyses of the effects of EU climate policy in a system of interconnected markets for output, intermediate inputs, and factors markets. Our analytical framework will account for the (fragmented) regulation of carbon emissions in the EU economy (EU ETS vs. ETS2), fossil and renewable energy supply and use, heterogeneous greenhouse gas abatement technologies, as well as behavioural responses to climate regulation by firms and households.

We use scenario-based counterfactual analysis to compare the fiscal and distributional effects of alternative policy designs of the future EU carbon pricing architecture (EU ETS, ETS2) and various revenue recycling options.

6. Data sources

- GTAP: National income and product accounts for EU countries and “Rest of the World” based on data from the Global Trade Analysis Data Project
- EU-SILC: European Union Statistics on Income and Living Conditions

- HBS: Household Budget Survey

References

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