Cap and Trade versus Tradable Performance Standard in a Production Network Model with Sectoral Heterogeneity

P. Burgold, A. Ernst, N. Hinterlang, M. Jäger, N. Stähler

universität freiburg

zee
Zentrum für Erneuerbare Energien
Centre for Renewable Energy

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Introduction

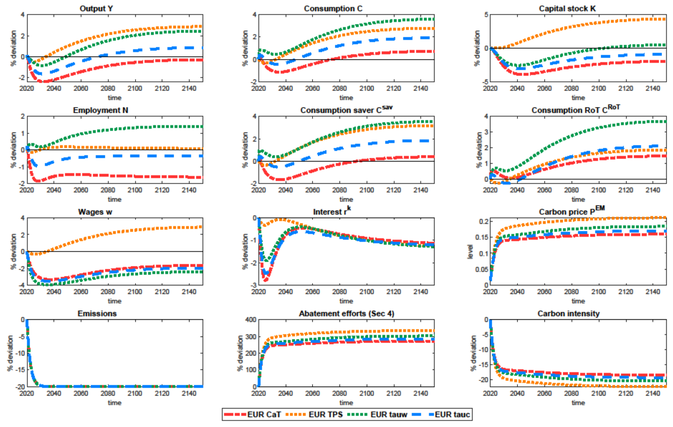
- Reducing Carbon Emissions is crucial
- Carbon Pricing is a popular instrument.
- Different approaches at our disposal:
  - Cap and Trade (**CaT**)
  - Tradable Performance Standards (**TPS**)
- Which approach maximizes Output/Welfare?

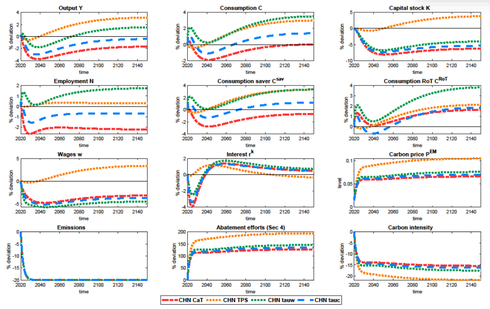
Methods

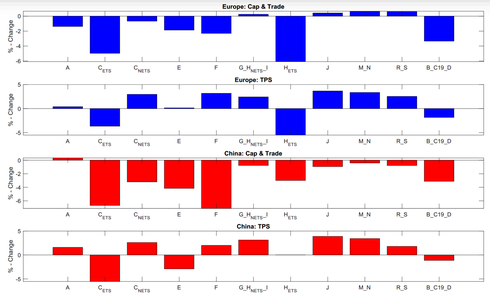
- Use the Bundesbank's EMuSe-framework, featuring…
  - Disaggregated production sector
  - Capital accumulation in a dynamic framework
  - Climate damages
  - Endogenous abatement
  - Two householdtypes

Results

- TPS outperforms CaT with regard to output and partly to welfare.
  - TPS redistributes revenue to firms and thus provides output subsidy to low emission sectors.
  - TPS shuts-off the reduction of emissions via degrowth.
- CaT analogous to TPS if revenue is redistributed to firms proportionally.
- TPS also outperforms other redistribution mechanisms (Klimageld) with regard to output.
- .TPS this allows cleaner sectors to increase production in order to acquire additional emission certificates.

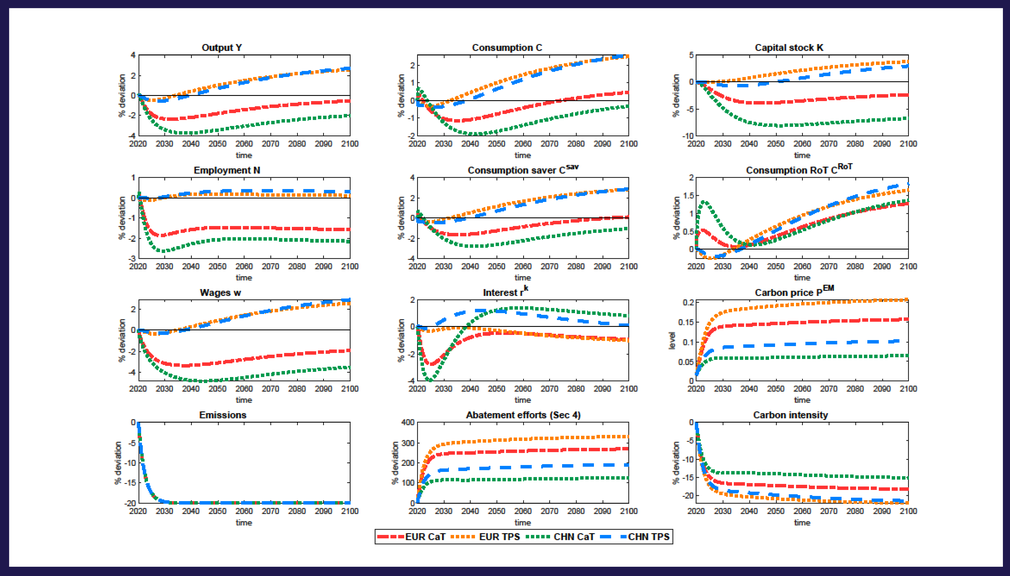




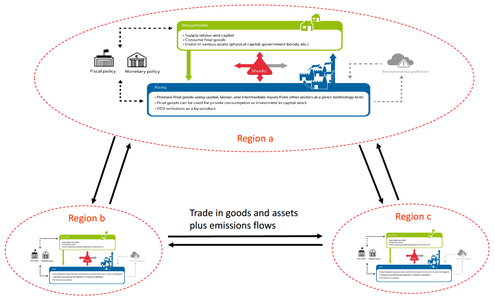


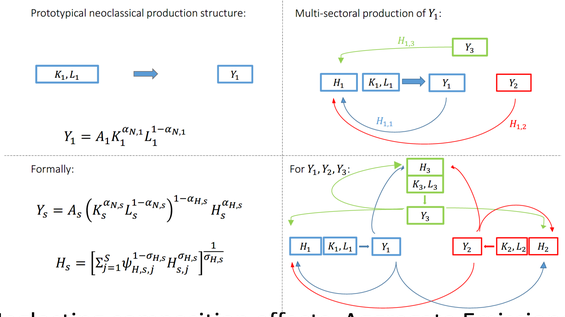
Limiting Carbon intensity (TPS) is more efficient than limiting emissions (CaT) - even when the same reduction is achieved.

Carbon Revenues should be used to reduce distortive taxes (labor, capital) – not lump-sum transfers (Klimageld).



The production sector consists of multiple sectors. Each sector uses all other sectors as an input and has a specific carbon intensity.





Neglecting composition effects, Aggregate Emissions (Z_t) can be described as the product of Output (Y_t) and emission intensity (κ_t):

$$Z_t^{pol} = Z_t = Y_t \cdot \kappa_t = Y_t \cdot \kappa_t^{pol}$$

The government can either restrict aggregate emissions (CaT) or emission intensity (TPS) to achieve an emission target

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