

Distribution of GHG emissions reduction targets and institutional frameworks for an international climate agreement

- Report of a survey among climate negotiators -

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Research project

The Relevance of Fairness Principles for Successful Cooperation - An Analysis of Choice and Impact on Burden Sharing rules in International Climate Negotiations

- Commissioned by: Federal Ministry of Education and Research (BMBF) Berlin, Germany, 2010 – 2013
- Methods: Theory, Laboratory experiments, **Survey among participants in recent international climate negotiations**
- Research Objectives:
 - exploring different aspects of fairness (e.g., burden sharing rules, procedural fairness) and their impact on the allocation of CO₂ - emissions rights in international climate negotiations
 - analyzing the acceptance of fairness principles as a basis for voluntary cooperation among heterogeneous actors
- Project Partners: ZEW Mannheim, ETH Zurich, HTWK Leipzig, Uni Kassel

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Presentation: Overview

1. Motivation and Objective
 2. Description of survey
 3. Burden sharing at the extensive margin: minimum participation rules (MPRs)
 4. Burden sharing at the intensive margin: the importance of equity criteria
 5. Conclusions
- This presentation
 - explores attitudes towards different forms of MPRs and burden sharing among climate negotiators
 - focuses on potential differences in perceptions among key players

Motivation and Objective

- collective gains from international efforts on reducing GHG emissions are likely to be promising but also create strong free-riding incentives
- an international environmental agreement (IEA) has to be negotiated among sovereign actors:
 - no third authority is able to enforce countries to commit to an agreement
 - participation remains voluntary

How can institutional designs of IEAs successfully address the enforcement problem?

- agreements must be acceptable to all parties
- fairness issues appear important in negotiations along (at least) two dimensions:
 - insiders vs. outsiders: extensive margin of agreement: **minimum participation rules**
 - distribution of burdens between (ratifying) countries: **burden sharing rules**

Motivation: Minimum Participation Rules (MPRs)

- MPRs set binding requirements for ratification (e.g., in terms of a minimum number of countries) that have to be fulfilled before a treaty enters into force
- MPRs are widely used in multilateral IEAs (**UNFCCC, Kyoto Protocol**)

Durban platform for Enhanced Action

- calls for the “widest possible cooperation by all countries and their participation in an effective and appropriate international response” (UNFCCC 2012)

In our survey we study

1. differences in importance due to personal background of participants
2. support for different MPRs based on
 - Required number of ratifying countries (MPR_{UNFCCC})
 - Required percentage of emissions (MPR_{EM})
 - Required population level (MPR_{POP}) (not part of this presentation)

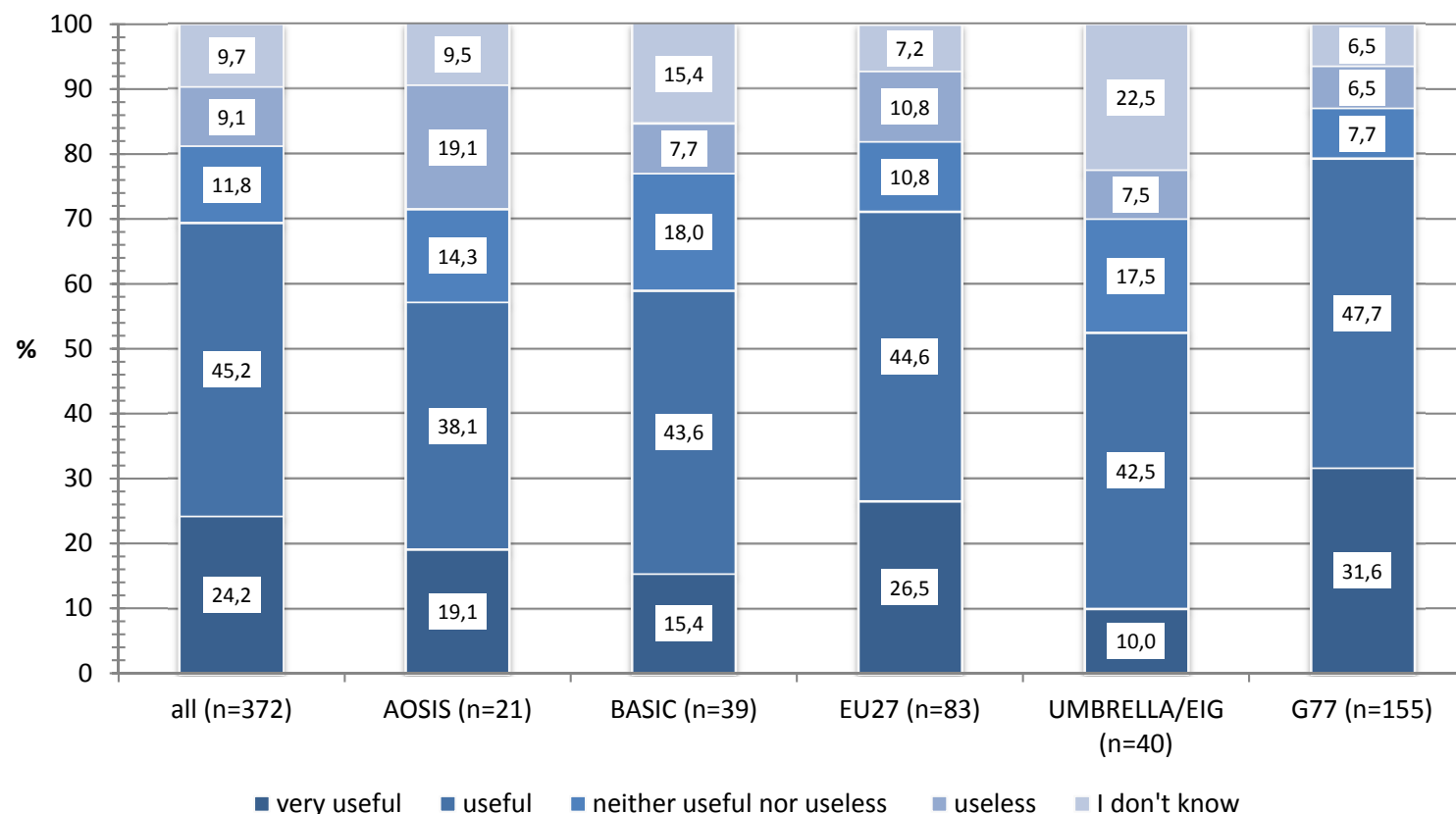
Motivation: Burden Sharing Rules

- acceptance of an IEA: distribution of costs and benefits is perceived to be „fair“
- UNFCCC addresses burden sharing: “*differentiated responsibilities and respective capabilities*” (UNFCCC 1992, Article 3)
- the perception on the „fair share“ on GHG mitigation targets differs largely among parties in international negotiations on (e.g., Lange et al. 2007)
- no **single** burden sharing rule will gain unconditional support from all parties in climate negotiations → negotiating **weights** for different burden sharing rules
- **Durban platform for Enhanced Action**
 - departs from long-standing and problematic division of countries into those with serious reduction responsibilities and others without obligations (Aldy & Stavins 2012)
 - survey among COP participants as a valid assessment of preferences for different burden sharing concepts among key players

Description of Survey: Data Collection

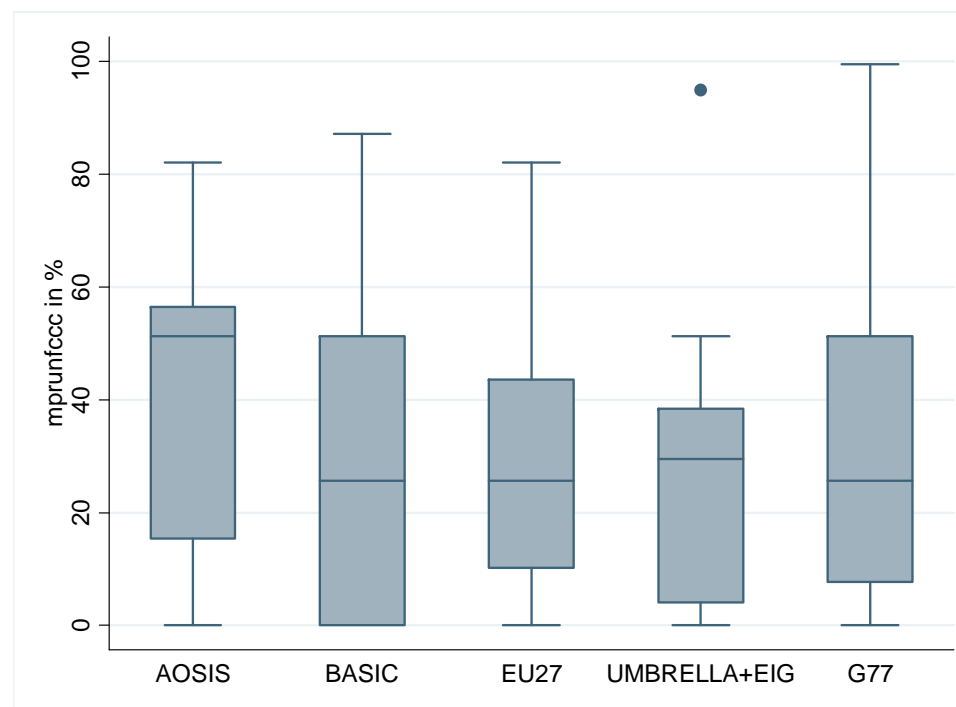
- We collected contact information from participants in international UNFCCC climate negotiations COP-16 (2010 in Cancún) and COP-17 (2011 in Durban)
 - participant lists
 - national UNFCCC focal points
- Survey was sent via email to 5,840 individuals in April 2012, two reminders in May and June 2012
- ~ 500 participants from 120 countries (response rate: ~ 8.5%)
 - Alliance of Small Island States (AOSIS): 6.5%
 - BASIC (Brazil, South Africa, India, China): 11.0%
 - EU27: 23.9%
 - UMBRELLA/EIG (non-EU developed countries): 11.2%
 - G77 (without AOSIS/BASIC members): 43.8%

Usefulness of MPRs for achieving a reduction in global GHG emissions



- overall large support rates (> 50% very useful/useful) for MPRs across different country groups
- acceptance rates are larger in G77*** countries than in UMBRELLA/EIG
- negative correlation between GDP per capita of respective countries and the assessment of MPRs
- but also evidence for differences within developed countries (EU27 and UMBRELLA/EIG)

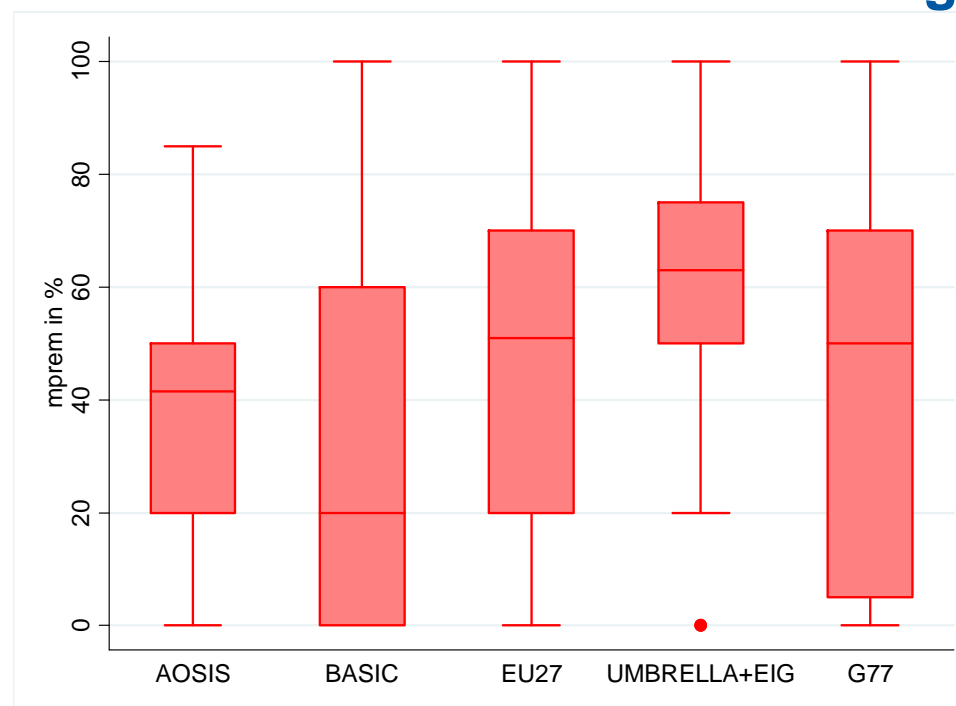
Assessment of a MPR based on a minimum number of ratifying countries



Note: box plot indicating median, lower and upper quartiles of responses

- on average negotiators include a minimum threshold of 31% of all UNFCCC member states
- rather low evidence for potentially controversial positions among country groups, but:
 - more restrictive minimum participation requirements from AOSIS* than from EU27 participants
 - negative correlation between MPR_{UNFCCC} and human development indicators (HDI 2011)

Assessment of a MPR based on a minimum share of global GHG emissions



Note: box plot indicating median, lower and upper quartiles of responses

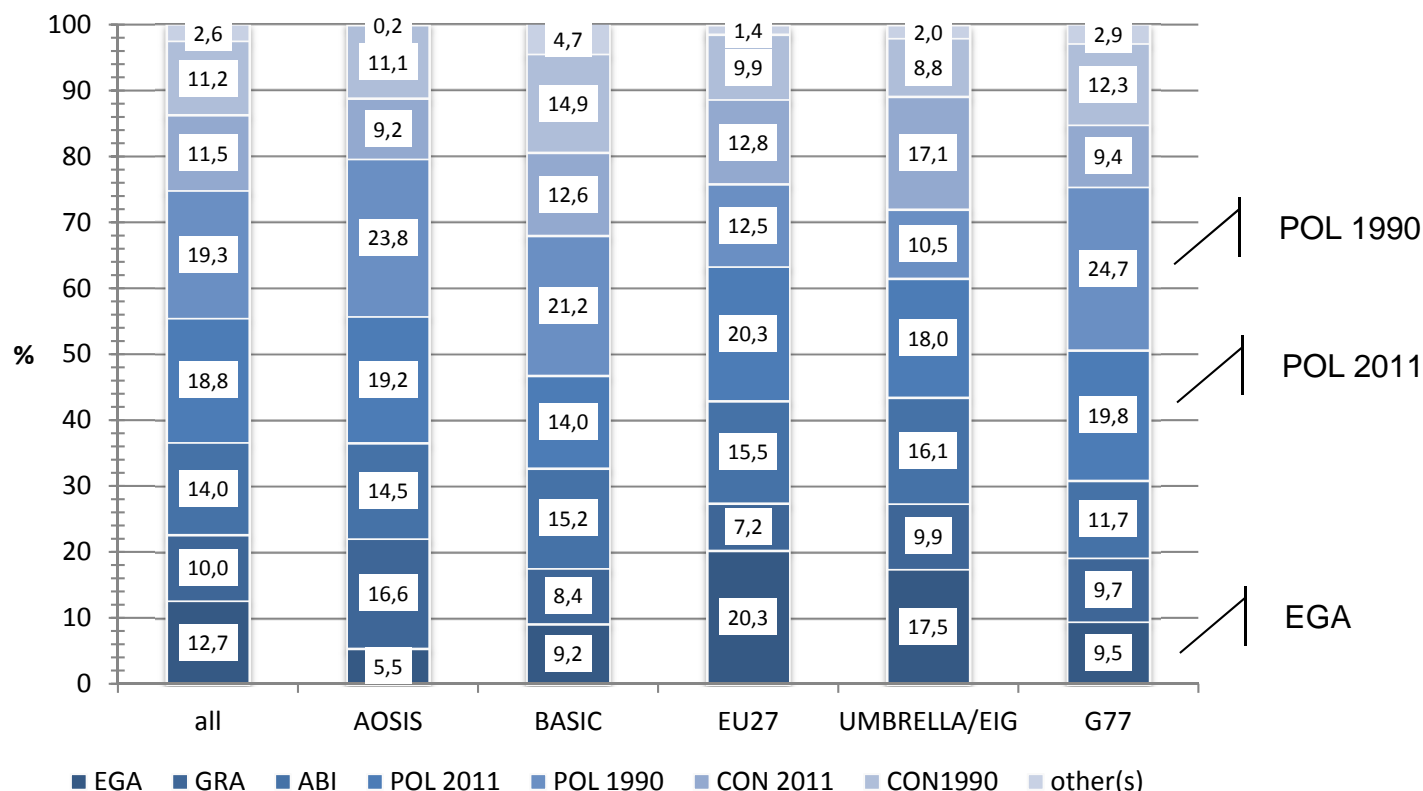
- on average negotiators include a minimum threshold of 38% of global GHG emissions
- more diverse picture among key players:
 - BASIC negotiators: lower minimum shares than UMBRELLA/EIG^{***}, EU27^{**} and G77^{*}
 - more restrictive minimum participation levels from UMBRELLA /EIG than G77^{***} or AOSIS^{**}
- positive correlation between MPR_{EM} and economic development (GDP per capita, HDI 2011)
- negative correlation between MPR_{EM} and population rates

Statistical evidence from regression results of ordered discrete choice models, significance levels ^{***} p<0.01, ^{**} p<0.05, ^{*} p<0.1

Which percentage weight should the following rules be given in the distribution of GHG emissions reduction targets between countries in an IEA?

- **Egalitarian rule** **EGA**
Principle of equal per capita emissions
- **Grandfathering rule** **GRA**
Principle of equal percentage reduction of emissions
- **Ability-to-pay rule** **ABI**
Principle of equal ratio between GDP and abatement costs
- **Polluter-pays rule**
Principle of equal ratio between production-based emissions and abatement costs
 - i. based on current emissions **POL2011**
 - ii. based on average historical GHG emissions since 1990 **POL1990**
- **Consumer-pays rule**
Principle of equal ratio between consumption-based emissions (i.e., production-based emissions adjusted by net trade balance in emissions of country) and abatement costs
 - i. based on current emissions **CON2011**
 - ii. based on average historical GHG emissions since 1990 **CON1990**

Weights for different burden sharing rules



- averaged over all regions, POL1990 (19.3%) and POL 2011 (18.8%) with highest weight
- support rates for POL2011 are lower in BASIC lower than in AOSIS**, G77**, and EU27*
- claims for equal per capita emissions mainly in developed countries (EU27 and UMBRELLA/EIG)
- strong claims for historical responsibility (POL1990) in AOSIS, BASIC and G77
- ABI approach with lowest regional differences (even higher weight in UMBRELLA/EIG* than in G77)

Statistical evidence from regression results of discrete choice models, significance levels *** p<0.01, ** p<0.05, * p<0.1

Summary and Conclusions

- survey among COP participants as valid assessment of preferences
- starting point: acceptable agreement must address equity issues along
 1. extensive margin: coverage, MPRs, insider vs. outsider
 2. intensive margin: distribution of burdens among ratifying countries
- Results:
 - strong support for MPRs, more controversies with respect to GHG emissions thresholds than to the number of countries
 - differences in support of (combinations of) burden sharing rules
 - even though many support incorporation of **all** rules to certain extent, the suggested weights differ significantly among key regions
 - still: negotiating weights of burden sharing rules reduces the dimensionality of bargaining space and may be beneficial
 - debate of justice claims based on *needs* rather than *culpability* may serve as a fruitful starting point to depart from a purely egoistic use of equity rules

Comments and Questions



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If you haven't participated in the survey yet you are invited to participate in a follow-up study:

tinyurl.com/climateneegotiators