

# Climate Policy and Equity: From Principles to a Proposal

Lucas Bretschger, ETH Zurich

BE/SE Equity Workshop, Brussels

November 6, 2012

# Introduction

- Role of equity principles
  - Focal points for negotiations
  - Raising political acceptance
- Contribution of the presentation
  - Selection of principles
  - Introduction of desert and economic dynamics
  - Adding to the discussion by providing a possible solution
- From science to practice: Aims of
  - Reducing complexity of negotiations
  - Improving quality of negotiations

# Climate Policy: Allocation

- Emission reduction
  - World social optimum (Temperature, world emission budget)
  - COP decisions, IPCC input
- Net benefit of climate policy
  - Positive net benefit on global level
  - No general Pareto conditions (mixed net benefit on country level)
  - Net benefit relatively higher for most low developed countries
  - Benefits often understated (especially when uncertainty is included)
- Current and future abatement cost
  - Often overstated in simulation models
  - Dynamics mostly not fully included

# Climate Policy: Distribution

- Distribution of pollution permits
  - Maximizing political acceptance of agreement
  - Marketable permits  $\rightarrow$  wealth distribution
- Country positions depending on
  - Country net benefit
  - Fairness of overall agreement
- Important: Equity principles as focal points

# Focal Points

- General principles
  - with **broad** acceptance
  - where common understanding already exists
  - where objective verification is possible (use of special models is difficult)
  - where abatement targets are subsidiary (follow in a next step)
- Reframing the decision (bargaining) problem
- Increasing the chance of a positive outcome

# Three Equity Principles

- **Ability to Pay Principle**, parallel to:
  - Income taxation
  - Contribution to international organizations
- **Desert Principle**, parallel to:
  - Wage/income determination
  - Grants, awards
  - Applied to:
    - Abatement technology development (internal returns are not sufficient)
- **Proportional Burden Sharing**, applied to:
  - GHG abatement cost distribution
  - Reference point: current emissions (→ political acceptance)

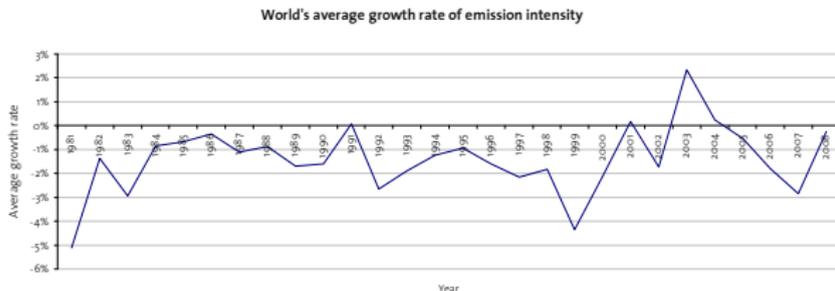
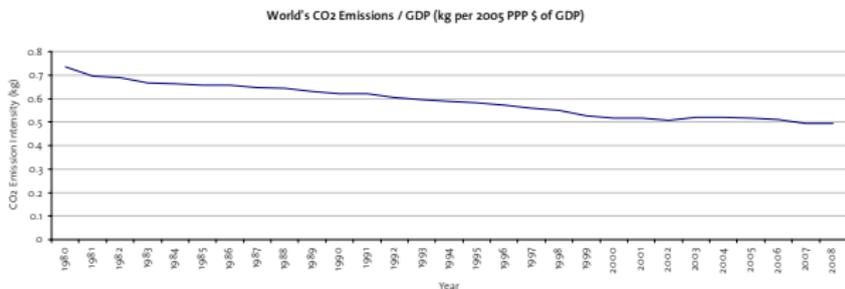
# Egalitarian Principle

- Has attracted a lot of attention
- Can be *derived* from previous three principles ..
- .. assuming equal (exponential) weighting of the three principles, which
  - is an acceptable simple rule
  - reduces complexity
- But: egalitarian distribution of pollution permits is not the final result

# Missing Elements

- **Dynamic** nature of sustainable development
  - Issue is the equitable access to sustainable development, not to carbon space
  - Technological opportunities increase over time (emission intensity decreases)
  - Green growth initiative: Future promotion of green technologies
  - Population dynamics
- Polluter Pays Principle (Responsibilities)
- International trade (Grey emissions)

# World Emission Intensity



(Data: World Bank 2012)

On average, emission intensity has **decreased** by 1% to 1.5 % per year!

# Including Dynamics

- General technology development
  - Over time, GHG emissions become less essential for growth (decoupling)
  - Technology helps emission intensity: later emissions  $\rightarrow$  less pollution permits
- Consider two cases
  - High initial emissions: decreasing future emission profile
  - Low initial emissions: (initially) increasing future emission profile
    - $\rightarrow$  Initial emission levels are an indicator of future emission profile
- Population development: Two options
  - Adjusting permit allocation to future population development (e.g. using forecasts)
  - Initial population as determinant: resource sharing with the offspring

# Polluter Pays Principle and Trade

- Polluters are responsible for emissions from a starting point  $T$
- Emissions from  $T$  to starting point of climate treaty might be weighted less
- Trade, grey emissions
  - Producers' responsibility: good information, burden sharing with consumers via pricing (tax incidence)
  - Consumers' responsibility: less information, possible double counting

# Synthesis

- A synthetic burden sharing approach has to attach importance to
  - the egalitarian principle and
  - the dynamic nature of sustainability
- This results in a specific (nonlinear) proportional burden sharing rule
- A number of assumptions and side conditions (like the initial date) have to be determined in addition

# Conclusions

- Synthesis necessarily means compromise
- Durban platform: non cooperation has large consequences
- Compare the situations of
  - No global mitigation agreement
  - A "not entirely perfect" permit allocation
- Proposed solution allows for a reconciling egalitarian and proportional sharing principles
- Sensitivity analysis exhibits the robustness of the proposed solution