



Adaptation financing in a global agreement: is the adaptation levy appropriate?

Eisenack (2012, Climate Policy)

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Climate finance and adaptation finance

- Transfers to developing countries to assist in coping with the consequences of climate change
- Crucial in the present negotiations (as part of the Green Climate Fund).
“mobilizing jointly USD 100 billion per year by 2020”
- Various adaptation cost estimates in comparable order of magnitude
- Why at all?
 - Solidarity / liability / strategy
- One open question: How should these funds be raised?
- Criteria for climate finance
 - Adequate / additional / predictable / sustainable

currently ...

- multiple existing but small funds (e.g. GEF), mostly not under UNFCCC
- and ...

Adaptation levy (AL) on the clean development mechanism (CDM)

Part I: Emission trading via the CDM

- Certified emission reductions (CERs) are issued in non-annex I countries that undertake projects to reduce emissions
- CERs are sold to annex I countries to offset own emission reduction commitments

Part II: Adaptation levy on traded CERs

- A 2% share of all issued CERs is given to the Adaptation Fund
- The Adaptation Fund sells these CERs to generate revenues for financing adaptation projects in developing countries

Potential problems of the adaptation levy (AL)

1. Do CDM and AL together have the potential to generate the required funds/transfers?
 - As the AL is subtracted from CERs generated by non-annex I countries: Does it indeed generate additional funds?
2. As the AL is essentially an ad valorem tax on emissions trading:
 - Is the excess burden substantial?
3. How do transfers and abatement costs depend on the rate of the AL and on emission reduction targets?
 - This might change the strategic situation for an agreement

State of the Literature

- Standard exercise: model international emission trading based on marginal abatement costs (e.g. Ellerman & Decaux 1998)
- Extensions of CDM market models: participation scenarios, institutional details, transaction costs, technology diffusion (e.g. den Elzen & Both 2002, Jotzo & Michaelowa 2002, Bréchet & Lussis 2006)
- CDM transfers to developing countries (e.g. den Elzen & Both 2002, Jotzo & Michaelowa 2002), strategic effects on climate negotiations (e.g. Rübhelke & Rive 2008, Wang et al. 2009)
- Estimates of AL transfers (UNDP, World Bank, Hof et al. 2009)
- All this work neglects the AL or take the 2% AL as given
- Fankhauser et al. (2010): compare tax incidence for 2% and 10% AL
- Discussion of alternative financing models (Hepburn & Müller 2010, UN 2010)

Model of the adaptation levy

Partial equilibrium

- Demand minimizes total cost for annex I countries

$$TC_1 = pq + C_1(a - q).$$

- Supply maximizes transfers from the CDM

$$T_{cdm} = (1 - \tau)qp - C_2(q),$$

- In the market equilibrium

$$C_2'(q) = (1 - \tau)p = (1 - \tau)C_1'(a - q).$$

[note: all this depends on a functioning emissions market]

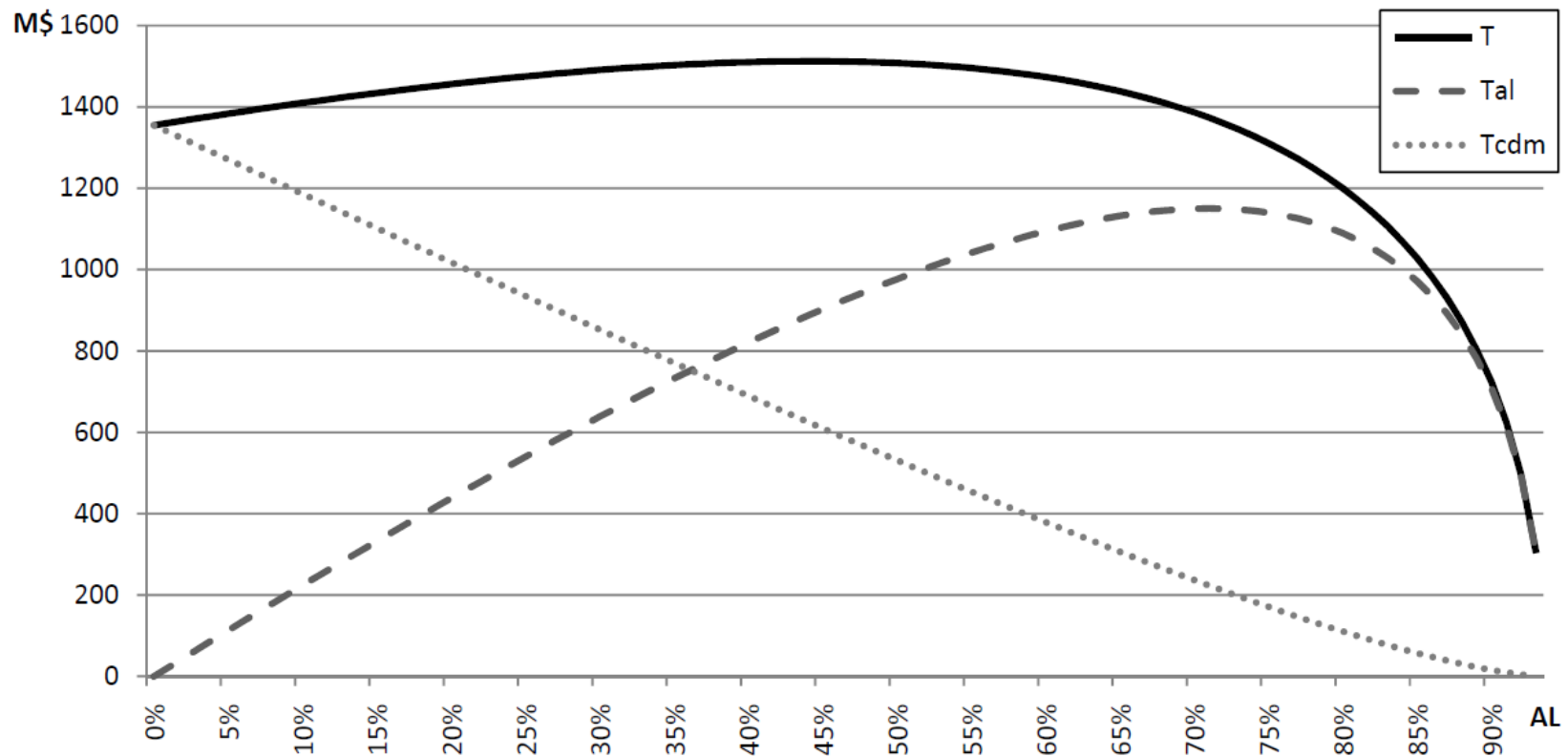
Full numerical model

- Based on estimated 2020 MAC curves for 13 world regions
 - CGE model calibrated to GTAP data for 2004, emissions to US EIA data
 - BAU emission projections 2020 consistent with US EIA projections
- Implemented as mixed complementary program (MCP) in GAMS

Transfers depending on the adaptation levy

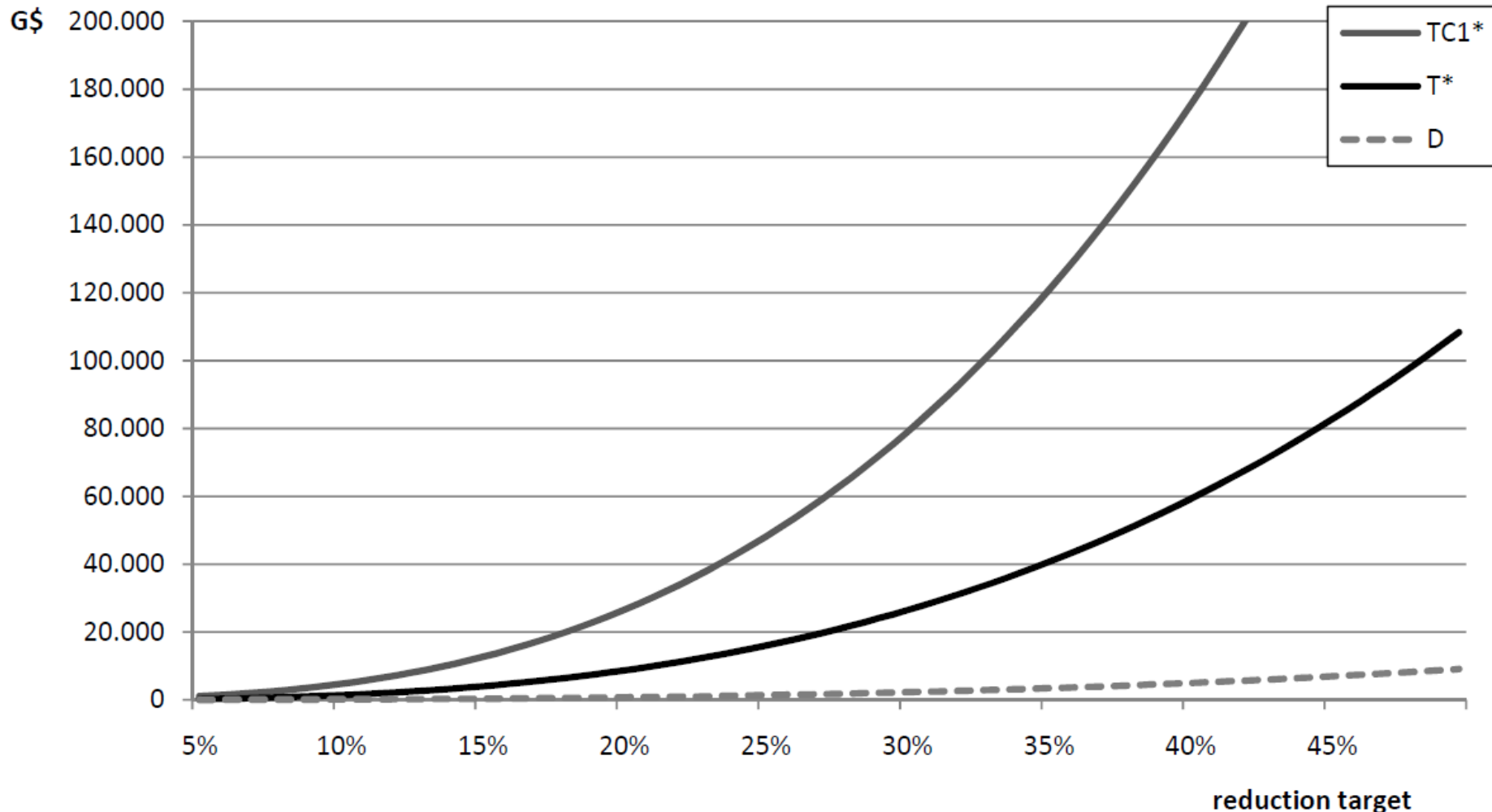
Scenario: emission reduction targets for 2020 according to the (lower) emission reduction pledges after Copenhagen

Total transfers $T = T_{cdm} + T_{al}$ depending on the AL



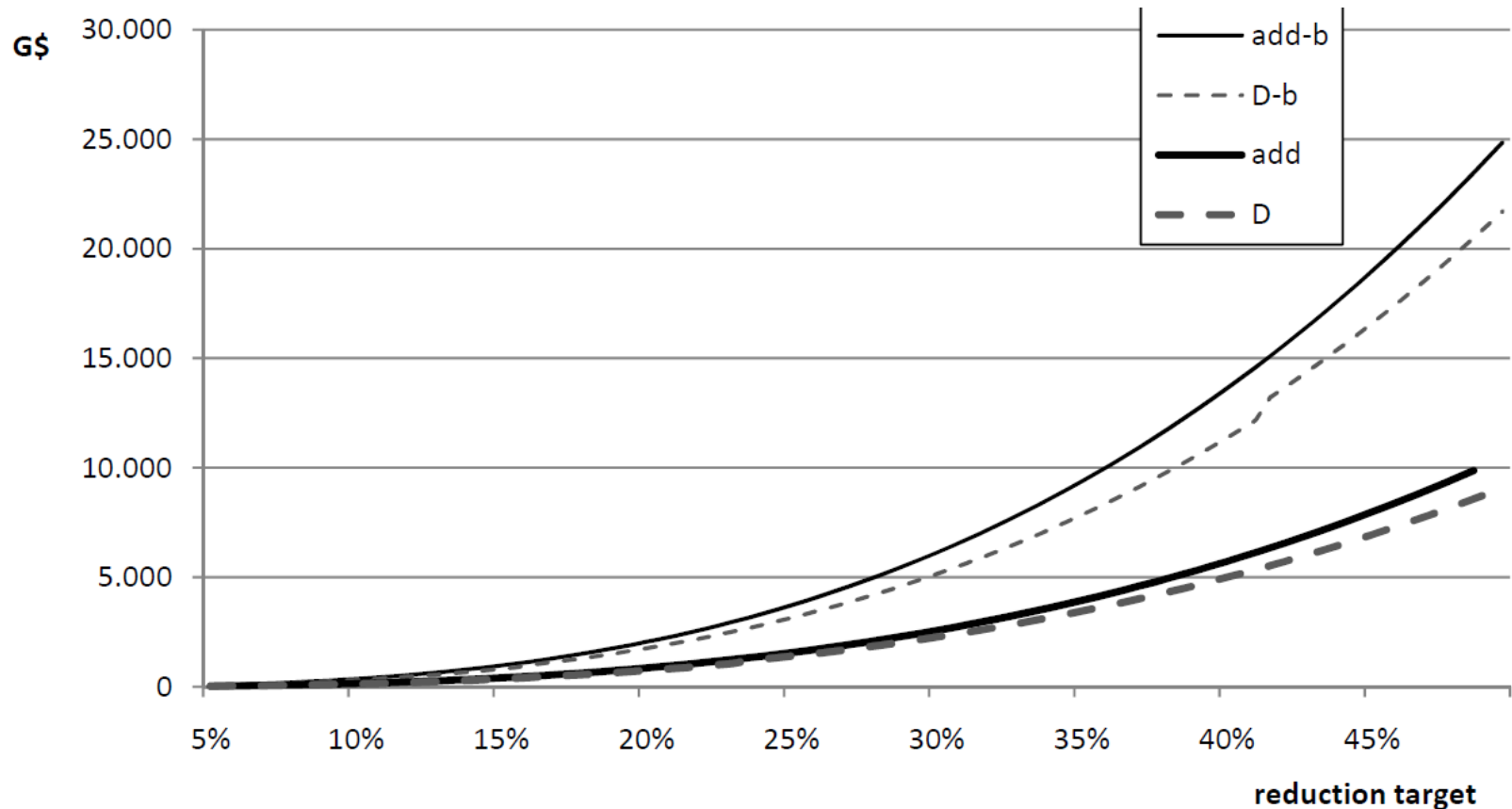
Transfers depending on reduction target

Tot. transfers T^* , tot. costs for annex I countries TC^*_I and excess burden D (assuming the transfer maximizing AL)



Additional funds and excess burden of AL

Maximal additional funds *add* (compared to 0% AL) and excess burden *D*
Sensitivity analysis: case (b) higher abatement costs in annex I countries

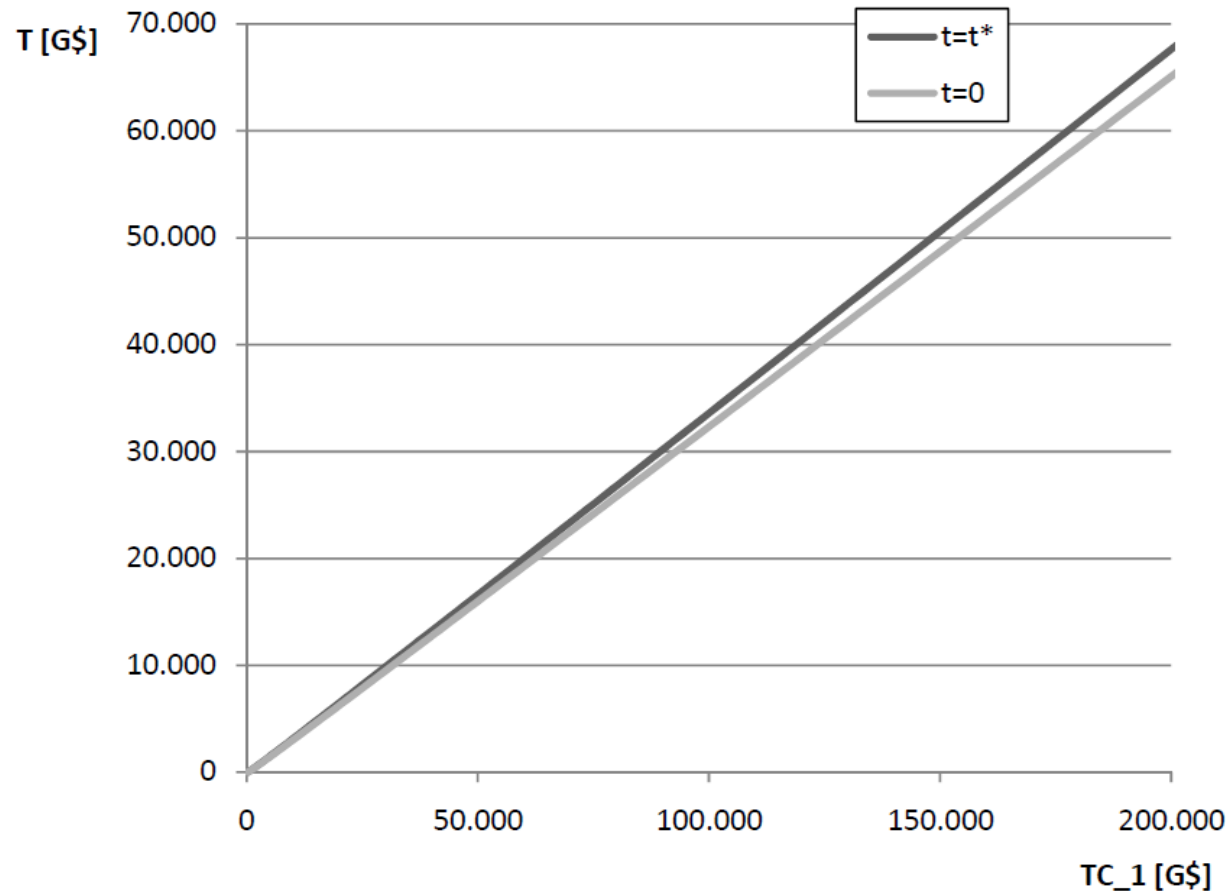


Strategic effect of the AL

How does the AL change the relation of total costs for annex I countries TC_1 to total transfers T ,

$t=0$: no levy,

$t=t^*$: transfer
maximizing levy



Summary and implications

1. The AL is far from generating adequate and additional funds
 2. Although it comes at small social costs, these are considerable compared to additional funds
 3. The AL sets slight incentives to less climate protection (more mitigation is associated with more adaptation financing)
- A similar problem holds for other proposals to finance the Green Climate Fund
 - International Air Passenger Duty
 - International Tax on Bunker Fuels
 - It would be preferable to chose mechanisms, where
 - Transfers decrease with more climate protection (auctioning of permits?)
 - Transfers are independent from mitigation (e.g. GDP rates)

Thank you for your attention!

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