



Developing guidance for addressing carbon leakage through border carbon adjustments

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Carbon Leakage

- Increase in foreign emissions as a consequence of domestic regulations
- Important because GHGs are a *global* pollutant



Channels

1. “Competitiveness”
 - shifting of economic activity and production (Fischer and Fox 2012) and investment (Zhou et al, 2009)
2. Global energy markets
 - Reduced demand drives down global fuel prices encouraging more fuel use and emissions abroad (Burniaux and Martins, 2011)
 - Intertemporal leakage occurs when resource owners respond by lowering scarcity rents on exhaustible resources (“Green Paradox”, Fischer and Salant 2014)
3. Income effects (second order)
4. Technology spillovers from induced innovation
 - Potential for “negative leakage” (Gerlagh and Kuik 2014; Barker et al., 2007).

Options for Coping with Leakage

- All Channels:
 - Global carbon pricing

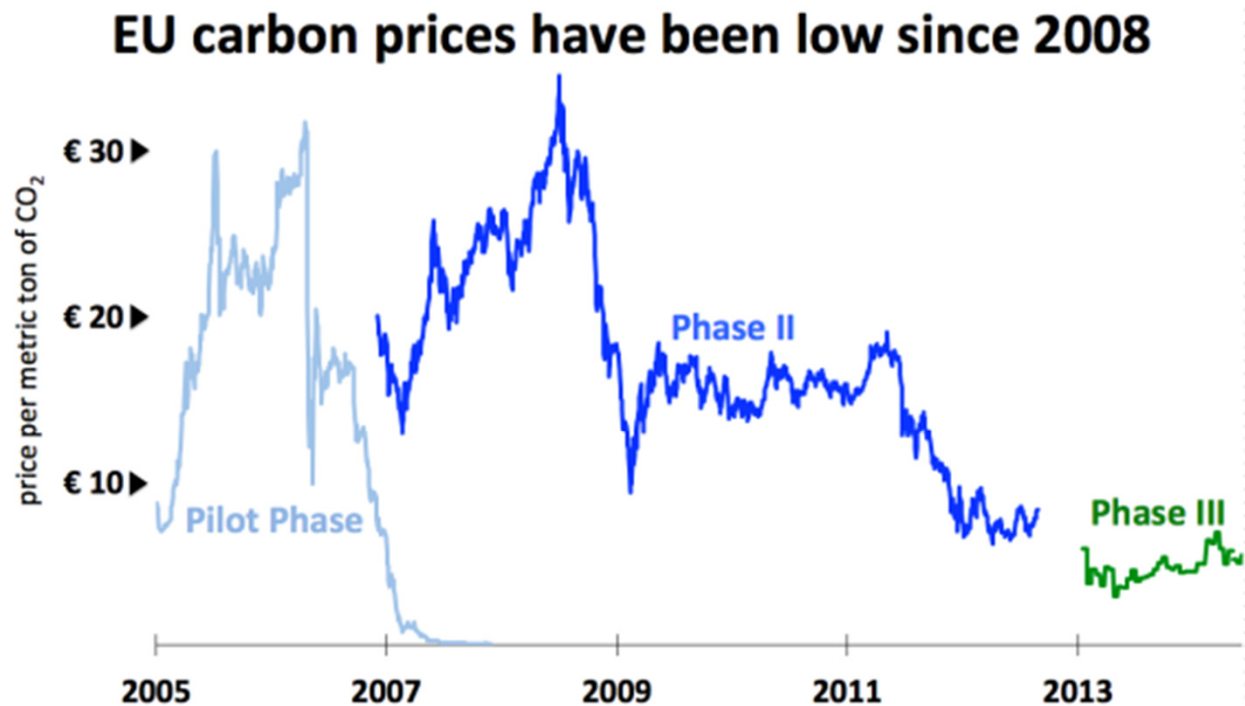


United Nations
Framework Convention on
Climate Change



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- Income effects
 - Hard to redistribute income, especially back toward developed countries!

Options for Coping with Leakage

- All channels
 - Global carbon pricing
 - Weakening policies
- Global energy markets
 - Withdraw supply at the same time (Harstad 2012)
- Income effects
- Technology spillovers
 - Give away technologies
 - But makes competitors even more competitive...

Addressing Competitiveness

- Politically most important channel
- Options
 - Exempting susceptible sectors
 - Lose all incentives (Boehringer, Carbone and Rutherford)
 - Doesn't address costs from indirect emissions
 - Output-based rebating / “benchmarking”
 - Retain incentive to reduce emissions intensity, but carbon cost not passed on to consumers (Fischer and Fox 2007)
 - Border carbon adjustment
 - Prices all consumption of carbon
 - Sectoral agreements
 - Trade partners also have incentives then (Barrett 2008)

Border Carbon Adjustment (BCA)

- Definition:
 - Levies a charge on imports based on a measure of carbon content, multiplied by a measure of the implementing country's carbon price
 - Intended to level playing field and ensure consumers face consistent prices
- Examples
 - California allowance requirement for electricity imports
 - EU attempt to regulate aviation emissions
 - U.S. legislative proposals: American Clean Energy and Security Act (2009), American Opportunity Carbon Fee Act (2015)

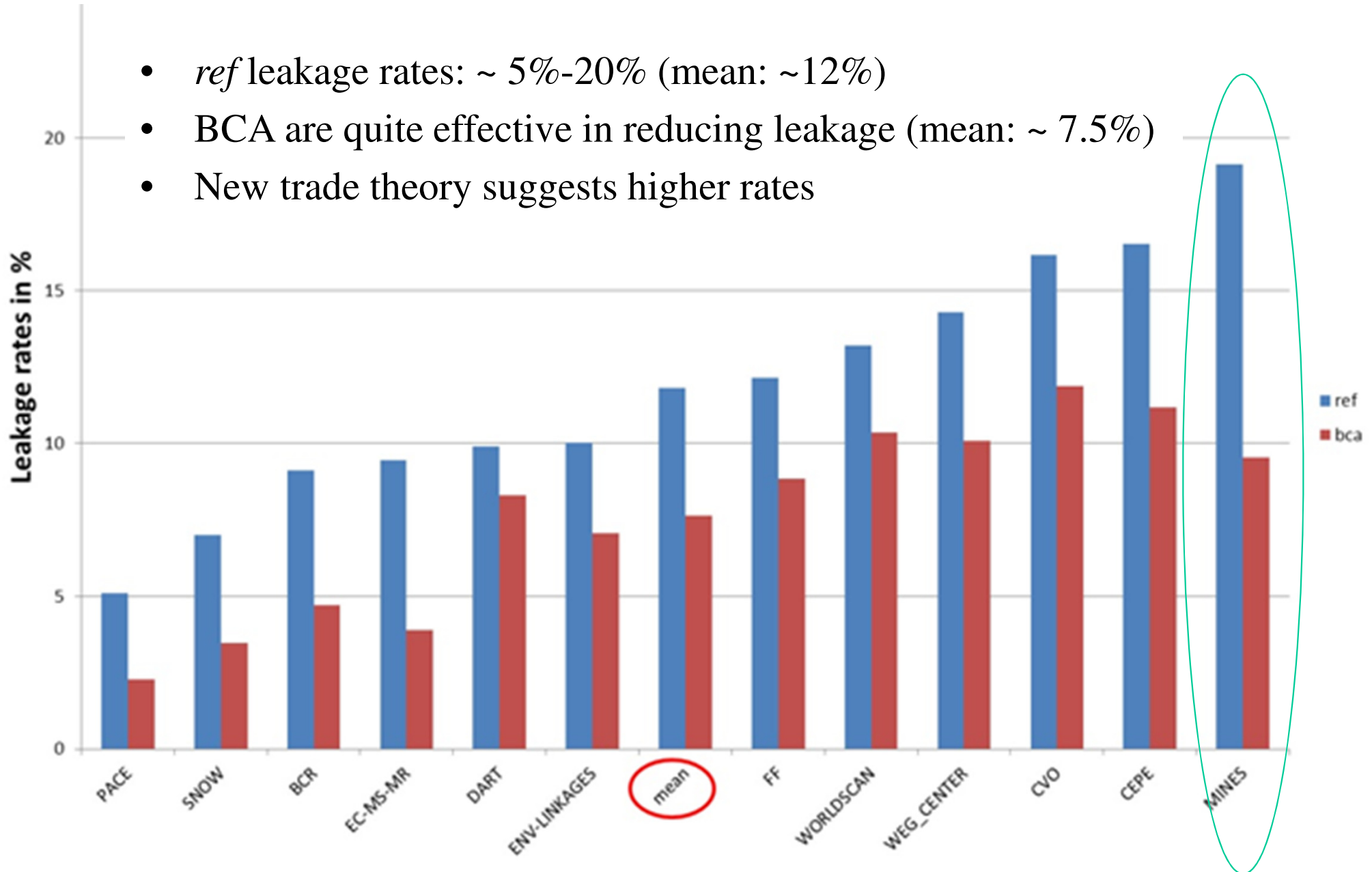
Carbon Leakage Estimates

- Range from -14 to 130% !
- Most in range of $5-30\%$ for economy-wide leakage
 - Energy Modeling Forum (EMF) model comparison study for BCA (*Energy Economics* 34 Supplement 2)
- Highly sensitive to energy elasticity assumptions
- Higher for smaller and cleaner coalitions
 - Boehringer, Fischer and Rosendahl (2014)
- Higher for certain sectors
 - Energy-intensive trade-exposed (EITE)
 - Work by Monjon, Quirion, Ponsard, Climate Strategies, etc. on steel and cement

Leakage Rates

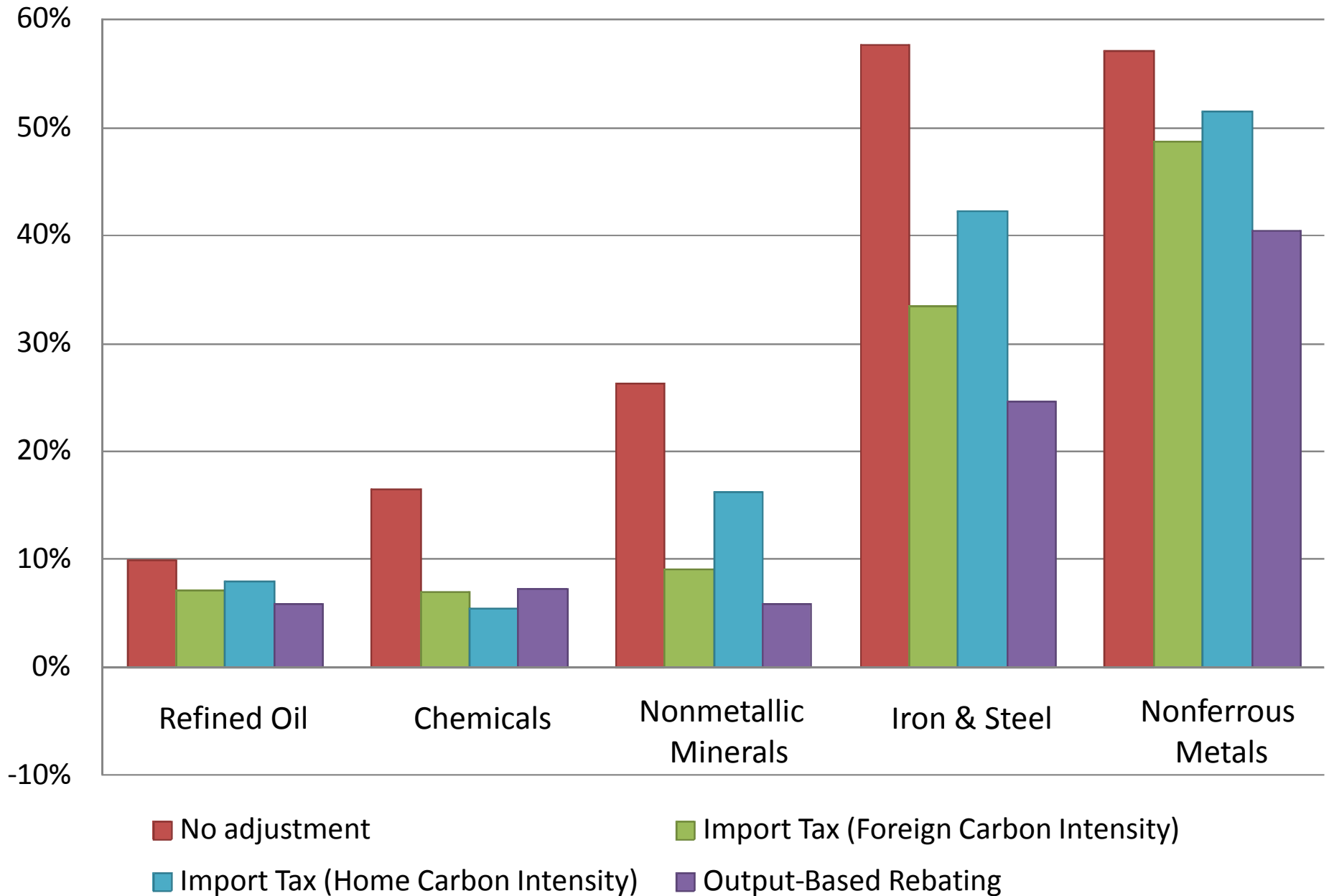
(Annex I; EMF study)

- *ref* leakage rates: ~ 5%-20% (mean: ~12%)
- BCA are quite effective in reducing leakage (mean: ~ 7.5%)
- New trade theory suggests higher rates

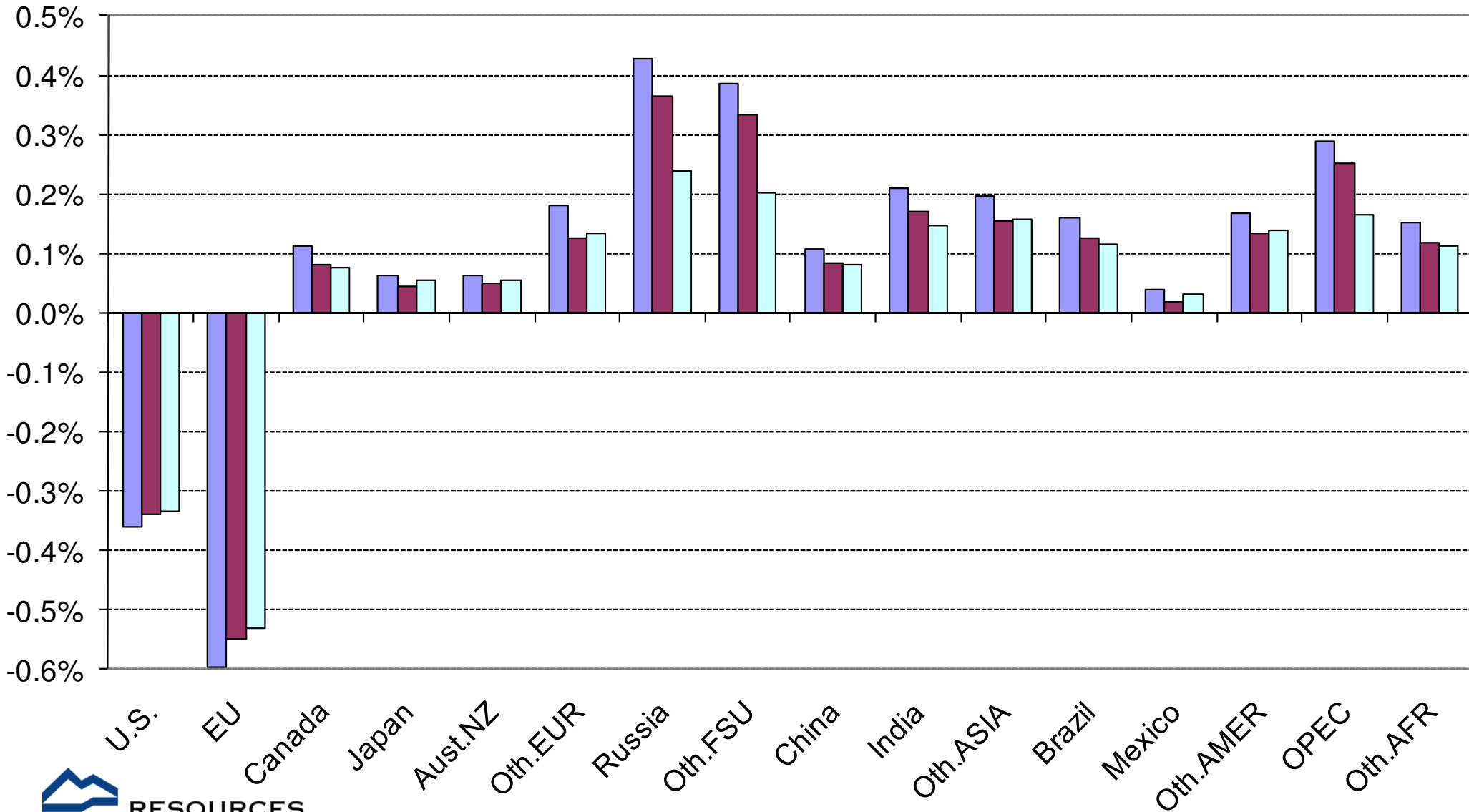


Leakage by Sector

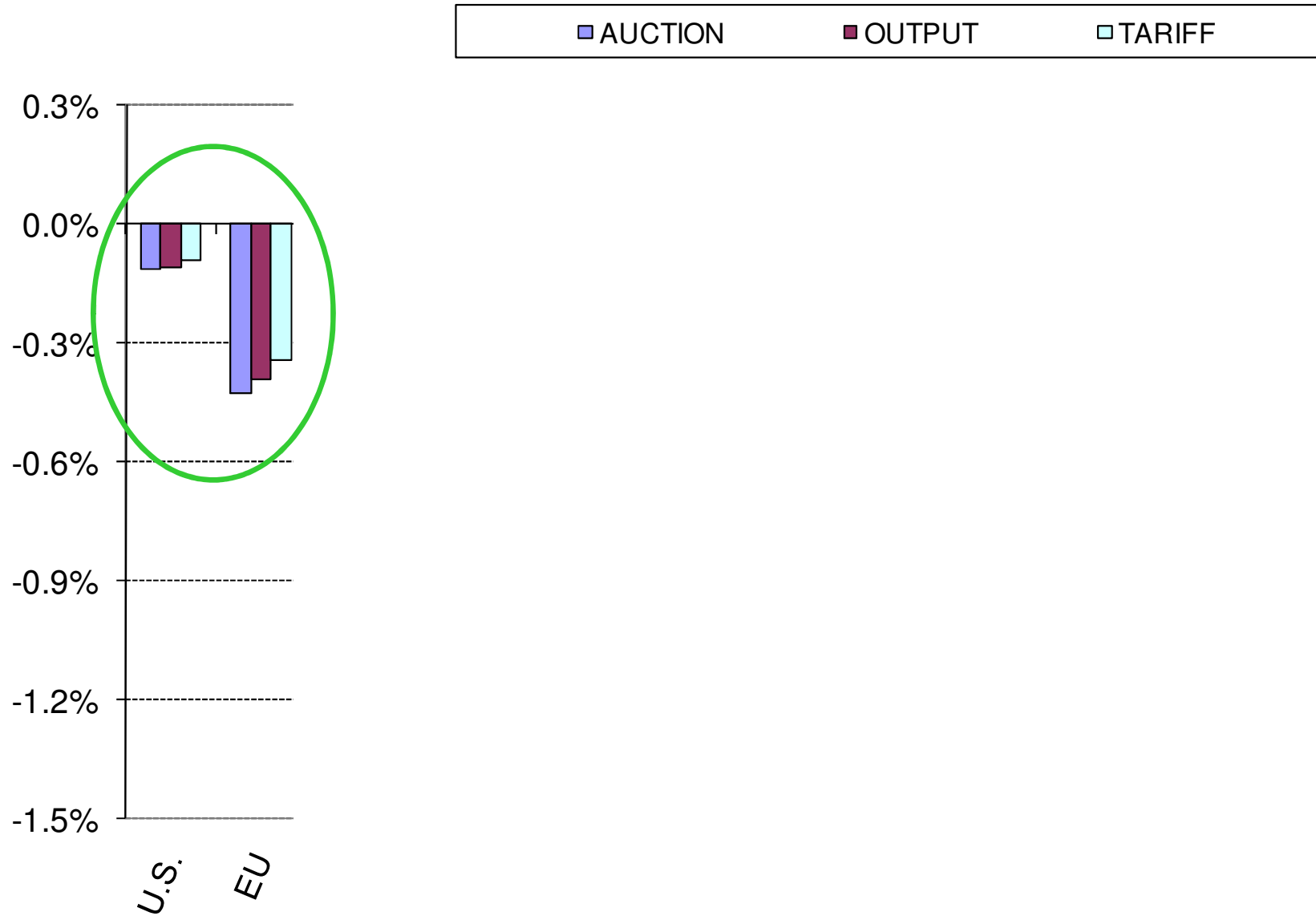
(U.S. Policy; Fischer and Fox 2012, *JEEM*)



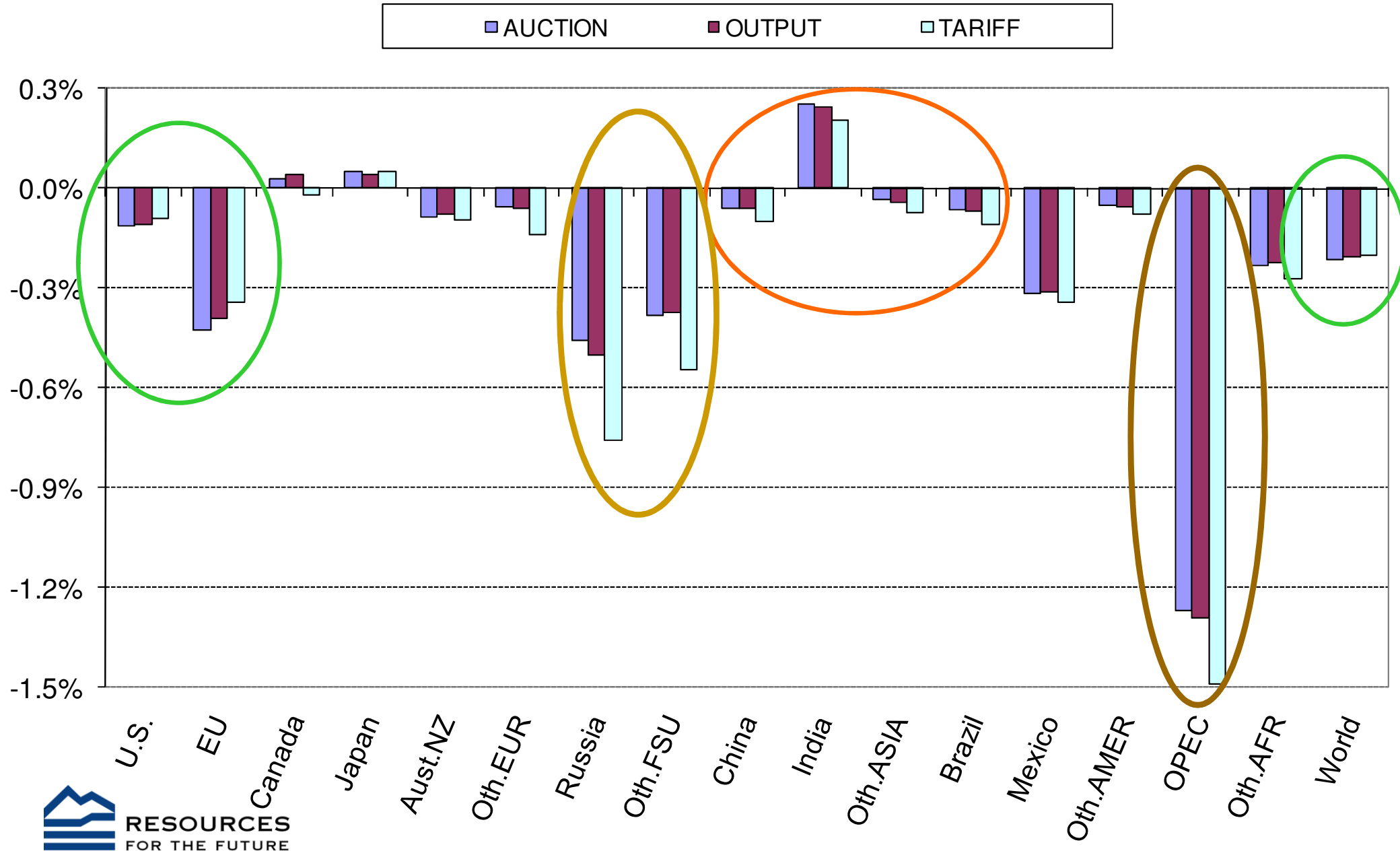
Percentage Change in Total Production, by Region (US and EU Caps) (BFR 2010 *BEJEAP*)



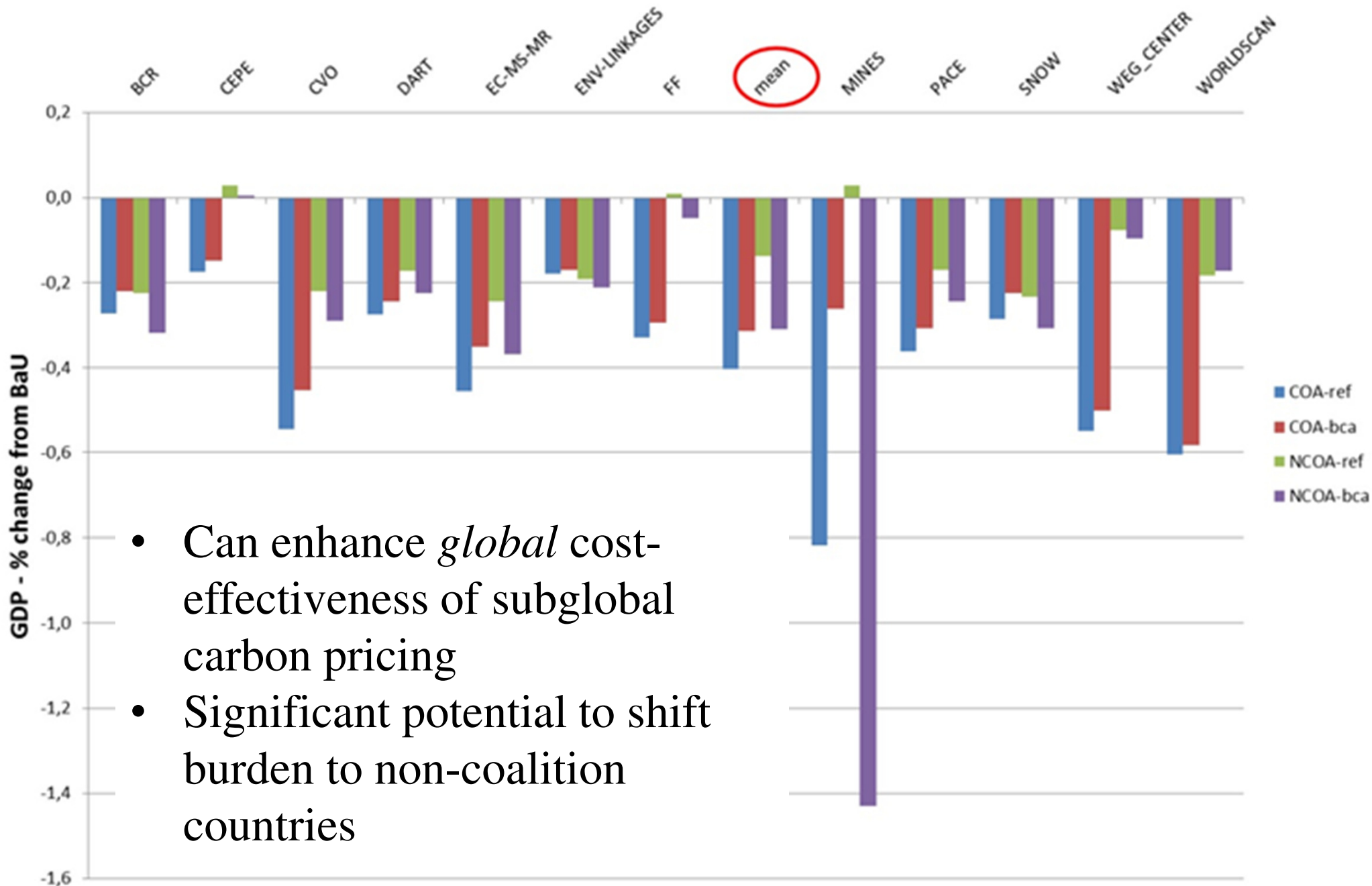
Consumption Effects of Joint U.S. and EU Action by Policy Option (BFR 2010 *BEJEAP*)



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Burden Shifting (% ch GDP from *bau*)



- Can enhance *global* cost-effectiveness of subglobal carbon pricing
- Significant potential to shift burden to non-coalition countries

Common but Differentiated Responsibilities (CBDR)

- UNFCCC, Article 3:
 - “parties should protect the climate system for the benefit of future and present generations of human kind on the basis of equity and in accordance with their common but differentiated responsibility and respective capabilities.”
- Potential conflict with BCA if aims to bring about equivalent national policies or unfairly burdens LDCs
- UNFCCC confers no legal rights on the practices of individual producers

WTO Obligations

- Non-discrimination and most-favored nation principles
 - prohibit discrimination among like goods on the basis of their country of origin
- Article XX
 - allows states to take otherwise-illegal measures that are aimed at, among other things, genuinely protecting the environment.
 - Does not apply to subsidies

Guidance on Good Practice: What and Why?

- BCA is likely to remain a divisive and current topic for some time, and will probably eventually be implemented.
- Enormous potential for damage if done badly
- More likely to be accepted with some degree of consensus

- Approach: Multi-stakeholder small group of experts
 - Climate Strategies, Climate Works, IISD, RFF, WRI ,
New Zealand Institute of International Research
- International (golden rule) perspective

Guiding Principles

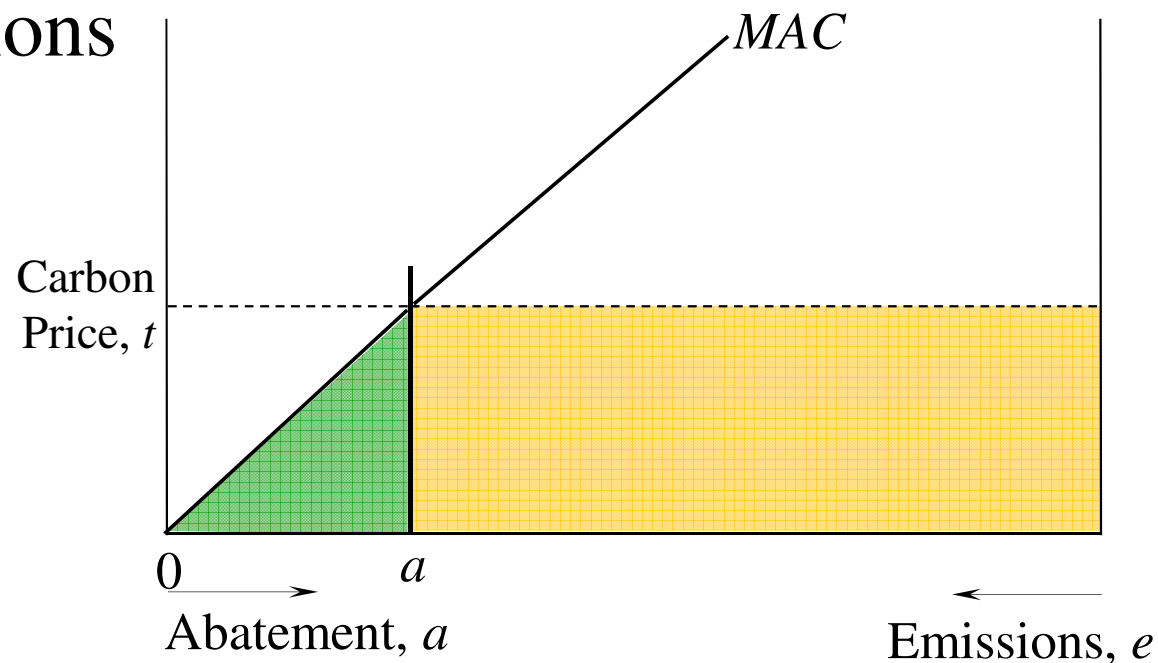
- BCA should be formulated and carried out in a manner that is
 - effective in reducing global GHG emissions,
 - effective in achieving its intended goals at the national level,
 - transparent, and coherent with the principles of
 - the multilateral system of trade
 - the multilateral climate change regime and
 - other internationally agreed principles and objectives..

Motivations for BCA

- Preventing leakage
 - Conforms with GATT Article XX goals
- Competitiveness concerns
 - Loss of production and related jobs from relocation, diversion of investment.
 - May facilitate domestic agreement on stringent climate policy
 - Same motivation as protectionism
- Leverage:
 - Economic incentive for trade partners to take climate action
 - Karp (2010)
 - Risks poisoning international talks
 - Not compatible with CBDR

Policies eligible for adjustment

- Emissions pricing policy!
- Two components of cost increases:
 - Direct abatement costs
 - Nonmarket regulations have this too; hard to measure
 - Embodied emissions costs
 - Only emissions pricing has this
 - This is what is being adjusted



Scope of applicability: Covered products and sectors

- Issues to balance
 - Leakage avoided
 - Risks of unfair application
 - Administrative costs
- Two criteria, used simultaneously:
 - High costs of climate regulations
(high GHG intensity of production or value added)
 - Inability to pass through costs of regulations
(trade sensitivity. Proxy: trade intensity)
- ➔ Restrict application to certain commodities
(steel, aluminum, cement, some chemicals..)
 - Boehringer, Carbone and Rutherford (2013): comprehensive BCA shifts more welfare from developing countries than lowers costs

Scope of Applicability: Country-Based Exemptions

- Issues: administrative burden, leakage extent, leverage, CBDR compatibility
- Recommended exemptions for countries with
 - An effective national emissions cap
 - Taking “adequate” national actions other than caps
 - defined to achieve coherence with CBDR and trade law
 - With a sectoral cap, or by some equivalent measures such as export taxes
 - LDCs and LICs if it could be assured that this would be carved out by the WTO’s Enabling Clause;
- All need trans-shipment provisions

Scope of Applicability: Emissions Coverage

- Scope 1 emissions: all direct emissions
- Scope 2 emissions: energy-related indirect emissions
 - those arising from purchased electricity, steam or heat
- Scope 3 emissions: all indirect emissions not covered under scope 2
 - Not recommended: too complicated and minimal leakage

Determining level of adjustment

- Producers should be given the option to provide verified firm-level data on emission intensity
- Benchmarks should be product-specific, and also where appropriate specific to different production processes.
- For scope 1 (direct) emissions, use average emissions intensity in the importing country.
 - Less variance across countries
- For scope 2 emissions, use average emissions intensity in the exporting country.
 - More variance and better data availability
- Financial and technical assistance in accounting, reporting and verification, to assist foreign covered exporters in submitting verified individual data.

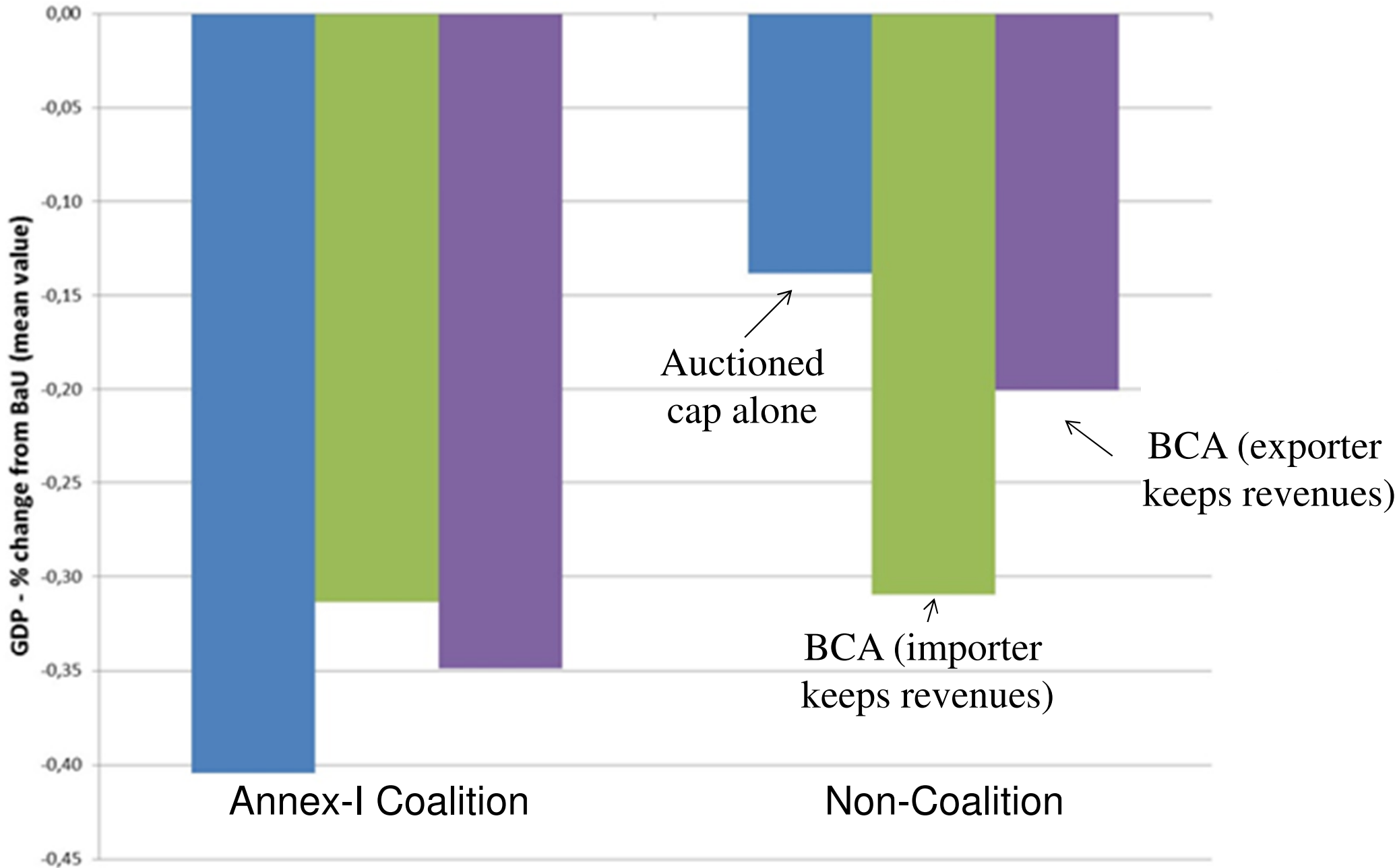
Credits against adjustment

- Any free allocation afforded domestic producers
- Carbon prices paid in exporting country
 - If not exempt
- No adjustment for non-price-based policies
 - Can't measure well
 - BCAs adjust for payments on remaining embodied carbon, not abatement costs

Use of Revenues

- Earmarking revenues can help respect CBDR:
 - Refund to exporter (directly or via clean fund)
 - Contribute to internationally administered adaptation fund
 - Disbursed by collecting government in ways that help developing countries cope with climate change
- Any of these probably helps with WTO compatibility
 - helps demonstrate environmental motivation.
- Could also allow exporting country to collect the equivalent revenue itself
 - e.g. in the form of export tax.

Changes in Burdens: Use of BCA Revenues



Export Rebates

- Not recommended
- Likely to be viewed as illegal subsidies
 - No Article XX exceptions
- Modeling finds import adjustments responsible for most reductions in leakage

Governance Structures

- Pre-establishment: notification for trade partners, meaningful opportunity to comment, adequate lead time.
- Official contact point established
- Methodologies public, predictable
- Calculations, parameters reviewed regularly
- Appellate procedure
- Data reporting follows international norms
- Regular assessment of regime against stated objectives
- Explicit sunset provisions

Conclusion

- BCAs likely to be used in some form
- Trade folks think BCA will be challenged but upheld in WTO
- Questions on role in climate negotiations
- More likely to be accepted and less likely to be abused if some agreement (at least informal) on international norms
 - See report “A Guide for the Concerned”
 - http://www.iisd.org/sites/default/files/pdf/2012/bca_guidance.pdf

Thanks!



My favorite publication...

