
Carbon Border Adjustments, Climate Clubs, and Subsidy Races When Climate Policies Vary

Kimberly Clausing and Catherine Wolfram



HARVARD Kennedy School

Key Externalities and Spillovers

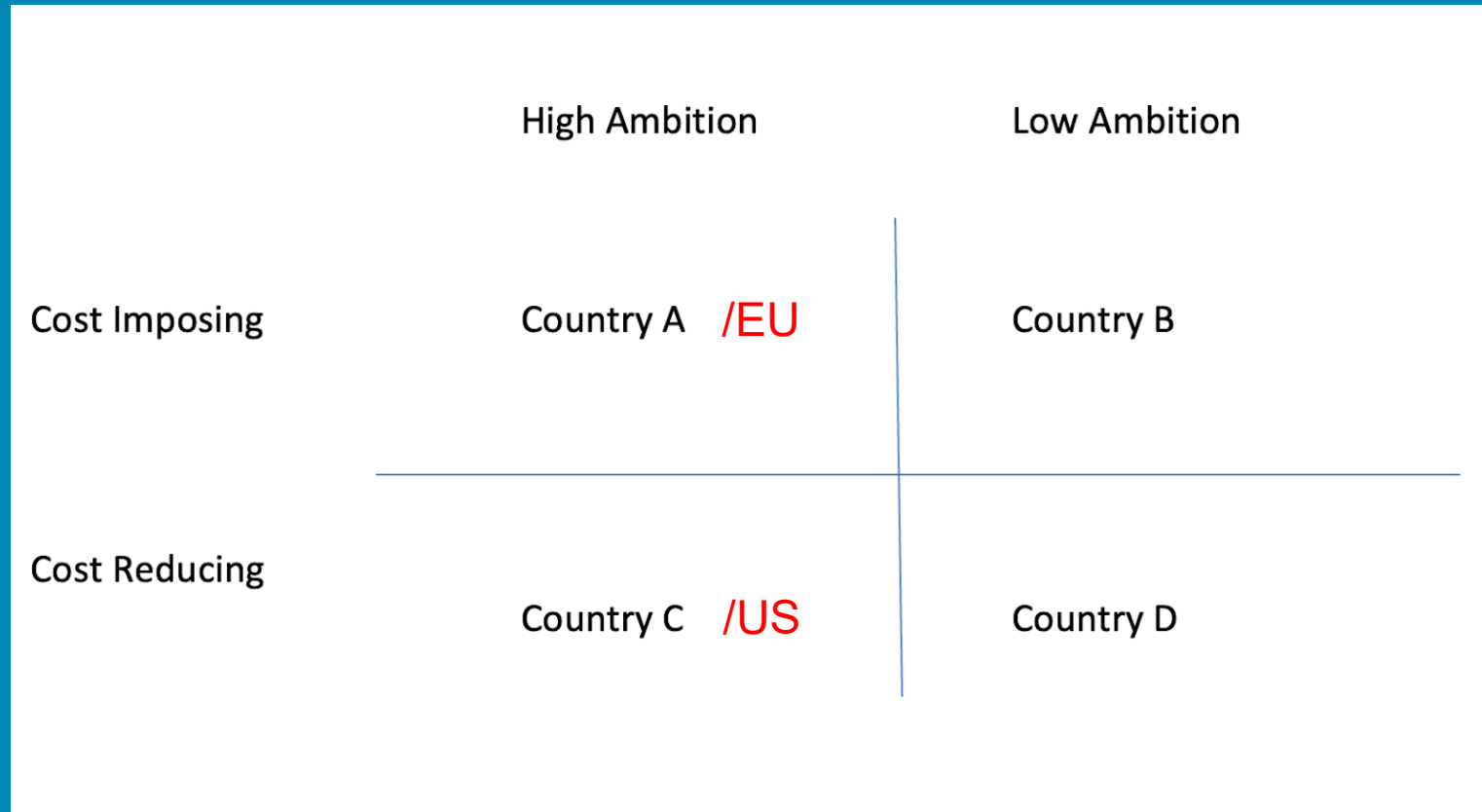
Externalities:

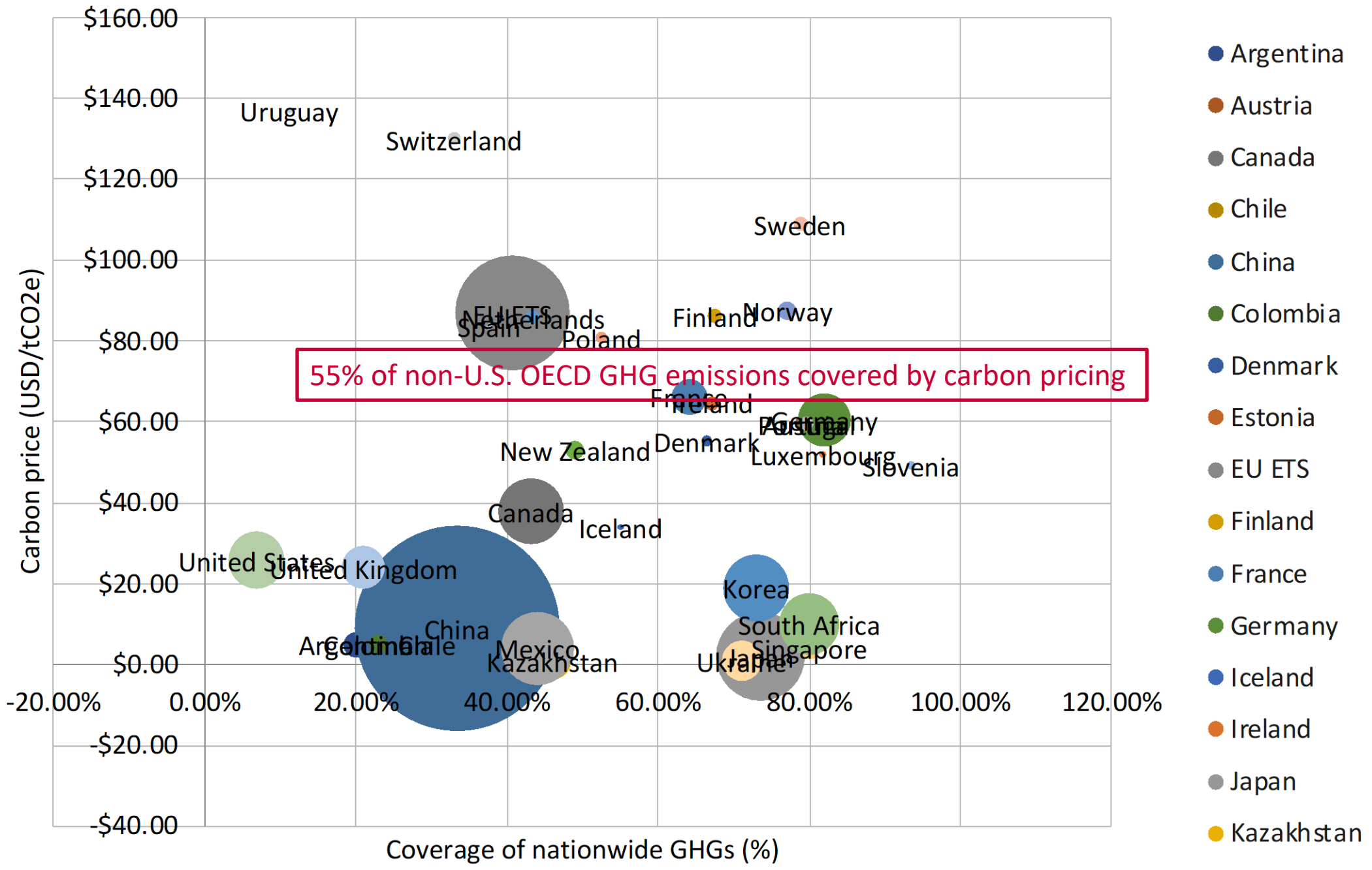
1. Social Marginal Cost $>$ Private Marginal Cost for GHG emission activities
2. Social Marginal Benefit $>$ Private Marginal Benefit for clean innovation and deployment

Policy Spillovers:

1. Free rider effect as low-ambition jurisdictions do too little policy response
2. Production competitiveness effects from divergent climate mitigation policy responses (both positive and negative)

Policy Asymmetry





EU vs. U.S.

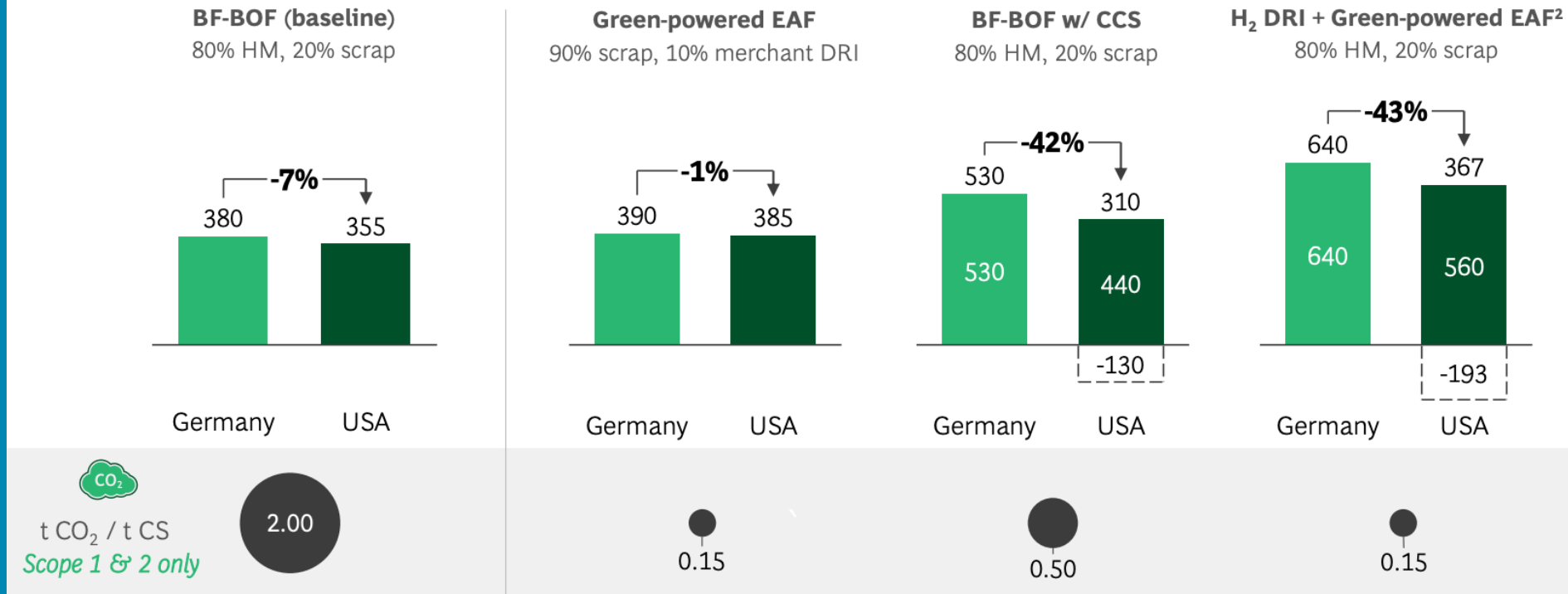
- *[The IRA is]not helping to build transatlantic value chains on the green transition, but rather actually severing those value chains.*
- Dombrovskis
- *The Inflation Reduction Act could “fragment the West”*
- Macron
- *To keep European industry attractive, there is a need to be competitive with offers and incentives that are currently available outside the European Union.*
- von der Leyen
- *We will unapologetically pursue our industrial strategy at home, but we are unambiguously committed to not leaving our friends behind.
We want them to join us.*
- Sullivan

Green Steel Costs

For example, tax credits for US green steel could provide up to ~40% savings compared to Germany in the international market...

Cost of green steel in the US and Germany in 2030, \$/t crude steel¹

■ CAPEX + OPEX □ Tax credits 2030 view³



Note: EAF = Electric Arc Furnace, BF-BOF = blast furnace - basic oxygen furnace, CCS = carbon capture storage DRI = direct reduced iron, DR-grade = direct reduction grade
 1. Cost assumptions do not represent current 2022 market prices (e.g., per unit costs of scrap = \$225, DR pellets = \$119, coking coal = \$100-120, etc.) 2. Onsite H₂ production with renewables, no storage on transport distance and location, availability of key inputs, etc.
 Source: GCCSI 2021 Technology Readiness and Costs for CSS; IEA; BCG analysis

Solutions? Climate Clubs and CBAMs

Nordhaus (2015) suggests **climate club** to address free-rider effect.

- General tariff rather than CBAM
- Carbon price would provide an ideal focal point for coordination

European Union, Canada, others interested in **carbon border adjustment**.

- Counters concerns about carbon leakage and industry competitiveness
- Starts with a few key industries and widens
- Careful implementation required; important to avoid reshuffling
- Also, issues associated with value chains; e.g., addressing competitiveness in steel does not address competitiveness for steel-using industries

Do CBAMs Encourage Policy Action Abroad?

CBAMs help address concerns from industry; they may be attractive on their own.

Can they encourage adoption abroad? Mechanisms:

- Dependence on emissions-intensive exports in CBAM sectors → adopt carbon price to avoid tariff (Turkiye example)
- Adoption converts foreign revenue to domestic revenue
- Rhetorical/moral/symbolic desire to join club, avoid penalties, and/or to impose CBAM on others

Concerns:

- Petulant countries could launch trade war in response
- CBAMs could be used where inappropriate due to “protectionism in disguise”
- Trade diversion could reduce dynamic incentives

The EU's so-called carbon border adjustment mechanism (CBAM) poses “a very big threat” to Turkey, “because 48 percent of Turkish exports go to the EU,” said Birpınar, who also serves as Turkey's chief negotiator at the COP26 climate summit and deputy environment minister.

Turkey is currently working on introducing a climate law, which Birpınar expects to be ready in three to four months. It will address “Green Deal issues,” he said, and will **introduce a carbon price to avoid getting hit by CBAM.**

- *Politico, 11/06/2021*

What about Climate Clubs?

Similar mechanisms:

- But: a broad tariff generates larger incentive effects, both to avoid the tariff and to convert foreign revenue to domestic revenue
- Rhetorical/moral/symbolic desire to join club, avoid penalties, and/or to impose tariff on others

Similar concerns:

- Will also generate trade frictions and the possibility of retaliation
- But: if price is not used as a focal point, but instead ambition, difficult to draw lines (and those would be subject to political power)
- Depending on design, particularly unfair to poor countries

Measure What Matters?

Some argue for CBAMs based on emissions content of trade, not the carbon price of the adopting countries (CBAM only).

Concerns with this approach:

- Does not address, and may exacerbate, competitiveness concerns → unfair to those with carbon prices
- Does not incentivize reductions from domestic industry
- Ironic/expedient policy posture for a country with subsidies and domestic content requirements
- Difficult to implement appropriate border adjustments w/o carbon price as a guide

In short, CBAMs make most sense with carbon prices.

Methane as a Pilot Multilateral Border Adjustment?

- Inflation Reduction Act implements regulations on methane emissions in the oil and gas sectors, backed by an emissions price
- EU is pursuing regulations on emissions; Parliament's proposal mentioned imports
 - ➔ **Border adjustment proposal: exporters either need to implement equivalent regulations or face fee**
- Wide variation in emissions intensities; worst offenders are Iran, Iraq, Venezuela, and Turkmenistan; Russia sloppy as well
- Low-cost mitigation technologies

Methane from Oil + Gas: Large-scale Emissions

- Worldwide methane emissions from oil and gas account for 3-6% of global GHG
- Reducing global emissions by 50% would reduce as much CO₂-e as the Inflation Reduction Act
 - >50% reductions expected from U.S. methane fee
 - These calculations based on 100-year global warming potential of methane (GWP = 30), 10-year GWP is 85, so reductions would keep short-run warming down and buy time

This Is Not Blah, Blah, Blah

- Important proof-of-concept of a multilateral agreement to **reduce emissions**
- Demonstrates power of sticks in addition to carrots
- Demonstrates the ability to use trade in the service of climate goals; reinforcing that protectionism is not the only route to addressing climate change