Review meeting

11 February

“Carbon Leakage: Options” paper
Project overview and paper outline
Project overview

• One of the two deliveries of CEPS project “Carbon Leakage: Options for the EU”

• Co-funded by five EU member states and seven companies from different sectors of the economy.

• First deliverable “Carbon Leakage: an Overview”

• Current importance carbon leakage:
  – New Leakage list
  – 2030 Climate and Energy Framework
  – Lack of clarity of post-2020 Leakage provisions in EU ETS
Objectives:

1. How to detect carbon leakage risk?
2. What options are available to address carbon leakage?

Two tracks in the paper to address objectives

1. “Carbon leakage risk” track
2. “Options to address carbon leakage risk” track
Carbon Leakage: Options paper – Outline (2)

• “Carbon leakage risk” track

Core: How do we identify which sectors are at risk?
Carbon Leakage: Options paper – Outline (4)

• “Options to address Carbon leakage risk” track

Core: Which options are suitable to counter leakage risk?
Carbon Leakage risk track: Causes, Symptoms and Risk Factors
Causes, Symptoms and Risk Factors

• Background
  – Definition of carbon pricing
  – Causes and impacts
  – Current debate

• Determination of carbon leakage risk
  – Carbon leakage risk factors
  – Carbon leakage risk tests
  – Assessment of risk tests
Cause of carbon leakage

• Competitiveness is affected by many factors, one of which is asymmetrical climate policies

• Climate policies become asymmetrical when they impose carbon constraints in one jurisdiction, while others have less stringent or no carbon constraints
Cause of carbon leakage (2)

• Most prominent example of asymmetrical climate policies is carbon pricing:
  – “Visible” carbon pricing, from various instruments (cap-and-trade schemes, taxation,...)
    • Direct costs (e.g. cost of compliance)
    • Indirect costs (e.g. through electricity)
  – “Shadow” carbon pricing from policies without a visible price (renewable energy targets.)
Cause of carbon leakage (3)

• Asymmetric climate policies are the fundamental cause of carbon leakage
• But: risk factors determine leakage risk
  – Carbon costs
  – Ability to pass through carbon costs
Impacts of carbon leakage

• Social impacts
  – Job losses etc

• Economic impacts
  – Loss of production, investment, exports etc

• Environmental impacts
  – Carbon leakage might cause increases in emissions globally
  – Carbon Leakage ratio:

“The ratio of emissions increases from a specific sector outside the country (as a result of a policy affecting that sector in the country) over the emission reductions in the sector (again, as a result of the environmental policy).” (Reinaud, 2008)
Current debate

• Ex-ante studies show potential for Carbon Leakage

• Ex-post analysis show little evidence
  – Possible causes of the discrepancies:
    • Free allocation Phase 1 and 2 of the EU ETS (effective provision?)
    • Economic and financial crisis (lower emissions and lower EUA prices)
    • Strategic barriers to trade?
  – Future may not be a good reflection of the past
    • Decreasing cap, economic recovery, international agreement,…

• The current debate:
  – Phase 3 (new Leakage list)
  – post-2020 (currently no clarity on provisions)
  – 2030 Framework
  – International agreement, including “response measures”
Current debate (2)

Impact Assessment for 2030 framework

• Certain design features to be discussed if free allocation through benchmarks is to be kept:
  – Progressiveness in free allocation (carbon leakage risk between sectors may differ)
  – The relation between the length of validity of the CLL and the length of the trading period.
  – Periodic revision of the benchmark values (reflect the technological development)
  – Closer link between allocation and production values (base production data on more recent years)
  – Amendment of the maximum amount of free allocation (recognize differences in reducing emissions)
Determination of carbon leakage risk

• Examine carbon leakage risk factors
  – *Carbon cost* and *Ability to pass through costs*
• Identify options to test for these risks
• Develop criteria to assess risk tests
• Analyze risk tests in different jurisdictions
Carbon costs - risk factors

a) Carbon price level
b) CO₂ intensity of production
c) Carbon costs relative to production costs
d) Costs passed on from other sectors
e) Sectoral margins
f) Abatement potential and the cost of abatement
Ability to pass Carbon costs through - risk factors

a) Trade intensity
b) Price setting mechanism
c) Risk for other parts of the value chain
   i. Transport costs
   ii. Loss of positive externalities
d) Commoditization
e) Market concentration
f) Availability of substitutes
g) Exchange rate risks
h) Price elasticity of demand
Carbon leakage risk tests

• Identification of carbon leakage risk is an issue in all carbon pricing mechanisms

• Quantitative tests:
  – Employed in the vast majority of CPM
    • Common dimensions
    • Different definitions and calculations

  – What quantitative risks tests check:
    • Trade related (intensity or exposure)
    • Financial impact related (carbon cost or intensity
Trade related risk tests

Imports + Exports

\[
\text{Imports + Domestic Turnover of Domestic producers}
\]

• Used in:
  – EU ETS
  – California
  – Waxman-Markey
  – Korea
Trade related risk tests (2)

• EU ETS: only one with stand-alone test (at 30%)
  – Captures 136 sectors out of 164 on leakage list
  – Covers 26% of industrial emissions in EU ETS
Trade related risk tests (3)

- California determines levels of trade intensity
  Low risk (<10%), Medium risk (10-19%) and High risk (>19%)
- Australia uses slightly different calculation
  \[
  \frac{\text{Imports} + \text{Exports}}{\text{Domestic Production}}
  \]
- Both Australia and California combine trade intensity thresholds with emissions intensity tests
- New Zealand: every sector is deemed trade intensive (with a few exceptions)
Financial impact related risk tests

• Two approaches:
  a) Carbon intensity (tons) relative to revenue (Euro)
     Indicator of carbon intensity relative to financial performance; could be extrapolated to carbon intensity of GDP
  b) Impact of carbon cost (Euro)
     relative to gross value added (Euro)
     EU is main proponent of this approach
Financial impact related risk tests (2)

- EU ETS
  - stand-alone test (>30%)
  - Price forecast/assumption of 30 Euro/EUA
  - Only two sectors reach 30% threshold
Other potential risk tests

• Risk indicators:
  – Provide indications that abnormal trends are observed
  – Trigger action
  – Allows provisions to adapt faster to market conditions
  – Could also be used in a qualitative way

• Ratio of carbon cost over:
  – Profit
  – Margins
  – EBITDA
  – ...
Qualitative risk tests

• EU ETS quotes qualitative tests:
  – “If the sector has borderline values on the quantitative criteria, then qualitative ones can be considered:
    • Emission levels and electricity consumption reduction potential of individual installations in the sector
    • Current and projected market characteristics
    • Profit margins as indicator of long-term investment or relocation decisions “

• EU ETS: Six sectors (2% industrial emissions)

• Australia: “Demonstrated lack of ability to pass through costs” due to international competition (Four sectors)
Combined tests

• Provide better coverage
• Capture combined effects of risk factors
• Thresholds are lower, but multidimensional)
• Combined Trade Exposure and Carbon Costs
  — EU ETS:
    • Sector is trade exposed,
    • Faces high carbon costs,
    • or a lower threshold for an both AND combine the two
  — 39 sectors qualified based on combined (16 of which could also qualify on trade intensity)
In/out vs. Tiered Approach

• Type of tests determine type of results
  – EU ETS: in/out tests lead to yes/no compensation
  – Australia: one in/out (trade intensity) combined with a graduated test lead to a few levels of compensation
  – California: both tests are graduated, which leads to an increased number of different levels of compensation

• Could the number of thresholds be increased further? Maybe even towards a continuum?
• Increase number of tests that are combined?
Forecast parameters fixed or updated

• How flexible is the mechanism?
• How is it updated?
  – Periodically: EU ETS
  – Triggered: California
• What is updated?
  – Underlying criteria and parameters?
  – Sector/installation level variables?
• Impact on stability of provision?
Criteria for assessing risks

- Does it cover a significant number of the risk factors?
- Does it provide for outliers and extremes?
- Is it focused?
- Is it flexible?
- Is it simple and understandable?
- Is data available?
- Is data reliable? Historical or forecast?
Assessment of risk tests: EU ETS

- Both carbon costs and pass through ability are captured to some degree
- Using carbon costs (and not intensity) is more focused
  - Number of assumptions (i.e. Long-term price of 30 Euros/ton)
- Trade exposure as a stand-alone?
  - Exporters with price-setting power?
  - Exporters with little to no carbon costs?
- Qualitative assessments
  - Captures those close to thresholds
  - Lack of transparency
- Indirect costs are difficult to calculate, and for now only include electricity price increases
Assessment of risk tests: EU ETS (2)

- Carbon costs test captures outliers
- Trade exposure test is less focused and does not capture outliers
- 95% of industrial emissions in EU ETS on Leakage List
- In/Out approach
  - Absolute winners and losers (cliff)
  - Higher pressure to be on the list: more politicized process
  - Too simplified?
- Tests are easy to understand (though result is not due to benchmarking)
- Data collection is a complicated matter (NACE vs installations)
Assessment of risk tests: Australia

- Both carbon costs and pass through ability are captured to some degree
- Emissions intensity tests
  - based on historical levels (no uncertainties associated with e.g. forecast on carbon pricing)
  - not directly targeted at additional carbon costs from the pricing mechanism
  - Intuitively difficult to grasp importance of number
- Activity definition; provisions are targeted at processes not sectors
Assessment of risk tests: Australia (2)

• Australia is more focused than the EU ETS
  – SFS Economics: 126 CLL sectors would not qualify in Australia
  – 9% employment covered in Australia; 42% in CLL

• The qualitative assessment for pass through ability is done in a transparent way

• Trade exposure: no risk test for outliers

• Flexibility
  – Tiered approach (highly emissions intensive, moderately emissions intensive, or not emissions intensive at all)
Assessment of risk tests: California

- Leakage risk is always a combination of trade intensity and emissions intensity
- Graduated risk rating:
  - flexible system; different risk levels are taken into account
  - sectors always receive some level of compensation
  - indirectly tests for outliers
- This approach lacks a complementary qualitative test for pass through ability
- Emissions intensity test: not directly targeted at additional carbon costs from the pricing mechanism
- The level of compensation is clear from the risk rating assessment.
Options to address Carbon Leakage risk track
Options to address carbon leakage

1) Criteria to assess policies
2) Options to address leakage risk
3) Assessment of options
4) Assessment of current measures
   - EU ETS
   - California
   - Australia
Criteria to assess Carbon Leakage provisions

• Does the provision address the carbon leakage risk?
• Does it undermine the environmental integrity of the climate change policy/carbon pricing mechanism?
• Does it provide for good market functioning?
• Does the provision meet the general goals and criteria of any EU policy?
  – Is the provision feasible and implementable?
  – Is the provision too costly?
Does the provision address the carbon leakage risk?

- Direct and Indirect
- Targeted
- Need complementary policies?
- Imports and Exports
- Production leakage, investment avoidance, investment reallocation,…
- Changes in the carbon market
- Full or partial compensation
Environmental integrity of climate change policy?

- Environmental effectiveness of the carbon price signal
- Need additional measures to ensure environmental integrity
- Convergence of international climate change policy
- Environmental impact
  - Allow for incentives to reduce emissions?
  - Cap cannot be inflated
    - Units entering the scheme need to be compensated (non-ETS or retiring EUAs)
    - Only good quality units enter the scheme
Does it provide for good market functioning?

• Adequate liquidity, Free entrance for new participants/free exit, Transparency, ...
  – Ensure faith in the market

• Price collars could be problematic

• Linking (EU ETS stated goal)
  – Similar anti-leakage provisions between schemes

• Other measures in the CPM need to take anti-leakage provisions into account
General goals/criteria of any policy

• Is the provision feasible and implementable?
  – WTO compatible
  – Distortion of competition
  – Politically acceptable
  – Practically feasible (international character)
  – Administratively implementable

• Is the provision too costly?
  – Administrative costs
  – Implementation costs
Options to address leakage risk

• Cost containment measures
  – Lower costs for all covered entities
  – International offsets
  – Linking
  – Transitional funding
  – Research and deployment grants

• Targeted measures
  – Center on sectors deemed at risk
  – Address main factors
  – **Focus of this section**
Options to address leakage risk (2)

- Free allocation for direct emissions
- Compensation for the cost of indirect emissions
- ETS in different speeds
- Border adjustments
- Targeted access to international offsets
Free allocation for direct emissions

- Central provision in EU, Australia, New Zealand, California, Quebec
- Incentive to reduce emissions is still present
- Several ways in which to operationalize
  - Timing (ex-ante and ex-post)
  - Fixed allocation vs. dynamic allocation
    - Production or Emissions based
  - Binary vs. tiered
  - Benchmark vs. grandfathered
Assessment of Free allocation for direct emissions

• Most commonly implemented
• Cannot be used alone (Does not address indirect costs)
• Adaptable and can recognize changes in market conditions
  – But: needs to take environmental integrity into account
• Imports and exports are taken into account
• Market functioning will be affected
  – Ratio free allocation to cap
• Impact on revenue from auctioning
  – Political issue
• On its own no WTO compliance issues
Compensation for cost of indirect emissions

- More difficult to evaluate
- Focus is on increased electricity costs
  - Carbon costs imbedded in other inputs: difficult to assess
- Necessary data is difficult to obtain
  - Pass through rates, emissions intensity of generation,…
- Important questions:
  - Who compensates (what level of government)?
  - What form does compensation take?
  - How stable is that compensation?
- EU: compensation at Member State level
- California: revenues from specific auctions are earmarked
Assessment of Compensation for indirect emissions

• Especially critical for energy intensive industries
• Cannot be used alone (Does not address direct costs)
• EU ETS: financial compensation
  – Assumptions on carbon price is crucial
  – MS-level; creates market distortions
• Bring it to EU level?
  – Political issue
  – Likely based on permits
• No WTO compliance issues
• Should not bring substantial extra administrative costs
ETS in different speeds

• Has not been debated in depth

• EU ETS: effort is defined for every sector by decreasing cap
  — But: ability to mitigate is not the same for each sector

• Different speeds/residual efforts
  — Different caps or reduction factor
  — Different benchmark rule settings

• Sectoral characteristics become more important
  — Margins
  — Technological pathways
  — Differences in intra-sectoral spread of carbon intensity
ETS in different speeds (2)

- There are already different speeds in EU ETS
  - Electricity sectors in EU ETS: only auctioning
  - Electricity sectors in EU ETS: some receive transitional funding in the form of EUAs
  - Benchmarking rule is in general the same for all sectors, but sectors are not the same
    - Differences in spread from benchmark
    - Leads to differences in efforts
• More than one ETS?
  – Split EU ETS, but linked
  – Split according to:
    • Ability to pass on costs
    • Residual effort
    • Carbon leakage risk rating
    • …
• Or: one ETS with sectoral differences
  – Burdens or benchmarks sized to sectors?
  – Access to offsets for some sectors?
Assessment of ETS in different speeds

- Politically difficult
- Good market functioning? (liquidity, complexity,...)
- Having different speeds in itself does not address carbon leakage
- Does differentiate between sectors on costs and efforts
- Environmental integrity should not be an issue
- Substantial work and negotiations necessary to define different speeds.
Border carbon adjustments

• Target imports and/or exports to ensure level playing field
• Important for WTO rules:
  – It is a tax or a tariff
  – Different WTO treatment of imports and exports
  – Address environmental issue, not a disguised trade barrier
• Imports: Different ways to implement:
  – Import tax according to embedded emissions
  – Holding/purchasing obligation for importers
• Waxman-Markey: foot in the door
  – If no international agreement before 2018: BCA
• EU ETS: BCA for imports is potentially raised in art. 10b
• Exports: tax rebate
Assessment: Border carbon adjustments

• Internationally sensitive
• Will it address leakage?
  – Design issue
  – Imports AND exports
  – Calculation of carbon (direct, indirect)
• Cost of collecting and administering data could be large (especially imports)
• Tax level based on carbon price is also complicated
• Ensuring incentives for exporters?
• Major concerns: WTO compliance and admin costs
Targeted access to offsets

• Lower cost of compliance
• CDM and JI had a capacity building influence globally
• Offsets contributed to oversupply in EU ETS
• ‘Targeted’: Sectors at risk receive access to offsets
  – Compliance purposes only
• Sectors currently in EU ETS may face:
  – Problems caused by decreasing free allowances (CSCF)
  – Same benchmark rule leads to bigger efforts for some
• Can be alleviated by increasing cap or shifting effort to non-ETS (by increasing free allocation)
• OR: allow targeted sectors access to international offsets to meet incremental part burden
Assessment: Targeted access to offsets

• Not a stand-alone measure
  – Costs will still be incurred and not passed through
• Intermediate step between status quo and direct increased compensation
• Could be used in conjunction with
  – Free allocation
  – ETS in different speed
• Cost neutral, not affect internal market and no WTO issues
• Not break cap (units can be used for international commitments)
• Would decrease demand for EUAs in EU ETS
• Connect EU ETS with international markets, but no incentive for others to converge
Assessment of current measures: EU ETS

• Carbon leakage list: main, but not only provision
• Risk: defined through trade intensity and importance of carbon costs
• Focus on mitigating costs
  – especially direct costs through free allocation
  – Benchmarks lead to:
    • Increased costs for more emission intensive installations in sectors
    • Incentives to reduce emissions
• Ex-ante, fixed and benchmarked allocation
  – Fair, politically acceptable
  – Not all costs are compensated
Assessment of current measures: EU ETS (2)

• In/out nature of carbon leakage list is problematic
  – Very large CLL
  – Not targeted
  – Probably oversupply of free allocation. Impact on long term price signal
• Indirect costs only at Member State level
  – Uncertainty and unbalanced. Distortion internal market
• Imports and exports included indirectly via trade exposure test
• CSCF and decreased level of free allocation make CLL untenable in the long run
• Changes in the market happen, potentially faster than CLL review
• Necessity for international action is recognized and stated goal, but provisions do not work towards that end
Assessment of current measures: EU ETS (3)

- Inclusion of aviation has led to an international agreement
  - Form and success are yet to be determined
- EU ETS is exhibiting good market functioning
- However: low price (has caused liquidity providers to leave)
- Two main costs of anti-leakage provisions
  - Admin costs (both for the regulator and operators)
  - Opportunity cost of free allowances
- Data acquisition is a concern
Assessment of current measures: Australia

• Free allocation Provision only covers direct emissions
  – Based on historic data, and ex-ante
• Free allocation is graduated and ‘risk-based’
  – Higher risk leads to higher compensation
• Number of eligible sectors is lower and seems more targeted than EU ETS
• Carbon Farming Initiative: domestic offset scheme
• Same costs as EU ETS: administrative and opportunity costs of free allowances
• However: New government has indicated that they will attempt to repeal the Carbon Pricing Mechanism
Assessment of current measures: California

- Free allocation is also main provision
- Tiered approach can be considered more targeted
- Indirect cost compensation through mandatory auctioning of free allowances by public utilities and revenue recycling
- Effect of free allowances on the price is limited due to the floor price
- Has successfully linked with Quebec
  - Though as a sub-national scheme international impact is perhaps limited but also no WTO compliance issues
- Same costs as EU ETS: administrative and opportunity costs of free allowances
Conclusions and next steps
Conclusions and next steps

1. General conclusions on leakage and leakage provisions

2. Challenges within existing schemes

3. Conclusions for the EU
General conclusions

• Carbon costs are but one element in the general make up of the competitive landscape
• Provisions have worked so far
• BCA meet many criteria; but face large obstacles
  – WTO, Trade repercussions, administrative challenges...
• Free allowances are the centerpiece worldwide
  – Could be positive for linking
  – Does not incentivize others to join carbon pricing
• No ‘silver bullet’
Challenges within existing schemes

• The future may not allow for the same approach as in the past (economic recovery)
• Amount of free allowances will decrease towards 2020
• Those on leakage lists still make efforts
  – Partial compensation
• Difficulty to recognize/account for market forces
• Unfocused compensation
• Uneven effort required between sectors
• Margins are currently squeezed (energy price differentials)
Conclusions for the EU

- Three main conclusions for the EU
  - Focused coverage
  - Appropriate compensation for direct costs
  - Compensation for indirect costs
Focused coverage

• Limit CLL
• Move away from binary model
• May be useful to focus on limited number of sectors that produce most ‘bang for the buck’
• Less use of qualitative tests and revisit trade intensity
• Additional quantitative tests related to real impacts of carbon costs (margins for example)
• Risk rating system?
Appropriate compensation for direct costs

• Dynamic, ex-post free allocation (production based)
  – Full compensation
  – Maintain incentive to reduce emissions
• But: could affect the cap (and environmental integrity)
• Could be solved via:
  – Greater burden on other ETS sectors
  – Greater burden on non-ETS sectors
  – Burden on public authority for sovereign compliance and purchases of credits in the international market
• Targeted ‘cheaper-than-EUA’ offsets?
Compensation for indirect costs

• Ensure that it is, just like for direct costs, done at the EU level
• In free allowances instead of monetary compensation
• Equal treatment across all Member States
• Provide compensation for what can be significant carbon costs for some sectors
End of presentation

• Thank you for your attention
Carbon Leakage: Options paper – Outline (3)

• “Carbon leakage risk” track
  – Identification of carbon leakage risk factors
  – Description and analysis of carbon leakage risk tests
  – Assessment of risk tests in EU, Australia and California (based on a set of criteria)
Carbon Leakage: Options paper – Outline (5)

• “Options to address Carbon leakage risk” track
  – Criteria to assess options
  – Identification and assessment of options
  – Assessment of current options used (EU, California, Australia)
Background: definition of carbon leakage

Own definition:
Broadly speaking, carbon leakage can be defined as the displacement of economic activities and/or changes in investment patterns, that directly or indirectly cause carbon emissions to be displaced from a jurisdiction with carbon constraints, to another jurisdiction, with less, or no, carbon constraints.

European Commission: Recital 24:
“In the event that other developed countries and other major emitters of greenhouse gases do not participate in this international agreement, this could lead to an increase in greenhouse gas emissions in third countries where industry would not be subject to comparable carbon constraints (carbon leakage), and at the same time could put certain energy-intensive sectors and subsectors in the Community which are subject to international competition at an economic disadvantage. This could undermine the environmental integrity and benefit of actions by the Community.”