An overview on policy options for leakage prevention and key design choices

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Climate Change

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Overview

- **Motivation for containing leakage risk**
- Which sectors to target
- How to support sectors at risk

Motivation for containing leakage risk

- Recap: preventing risk of carbon leakage may be motivated by two concerns
  - safeguard carbon abatement and cost-effectiveness of the carbon pricing regime; and
  - respond to concerns from affected firms and industries
- the challenge for policy-makers is twofold
  - they must correct for issues that arise when carbon prices are not globally harmonized (preventing "inefficient leakage", i.e. increase in market share for unregulated producers),
  - while at the same time avoid undermining the benefits that are expected from carbon pricing in the first place (promoting "efficient leakage", i.e. increase in market share for less emissions intensive producers)
  - In general, these two aims are in conflict, and policy-makers must work to balance one against the other
- **To best balance these objectives, policy-makers face two primary decisions:**
  - which sectors to support; and
  - which mechanism for providing assistance to use

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Determining sectors at risk

- Policy makers must decide how to set eligibility and assistance thresholds
  - policy makers have generally used carbon intensity (as measure of *impact* of carbon pri*ces)* and trade exposure (as measure of *exposure* to competition) of sectors or firms
    - these indicators determine eligibility for assistance and separate assistance categories into tiers
  - for example in the EU, sectors are eligible that
    - face a cost increase of >30%,
    - have a trade intensity of >30%, or
    - face a cost increase of >5% and trade intensity of >10%

Three key considerations for breadth of support

- Pragmatically speaking, there are three key considerations regarding the scope of assistance are whether to support
  - electricity generators (high carbon intensity but low exposure to trade)
  - entities that are not electricity generators, or a sub-set thereof
  - on a uniform basis, or providing tiered assistance that increases with leakage risk
- policy-makers need to balance political economy considerations with an objective to avoid distortions and save fiscal resource

Stylised outcomes of treatment choices

- Three stylised outcomes of the choices of whom and how to support are
  - limiting assistance to electricity generators reduces cost of assistance
    - where electricity generators are not materially exposed to international competition, this will not induce leakage
  - reducing eligibility for support of non-electricity generators reduces fiscal costs, and gives greater incentive for abatement effort but can raise risks of leakage
  - assistance on a tiered basis can reduce fiscal costs while better balancing leakage risks, but increases complexity of the scheme

Support choices differ across schemes

Exclusion of power sector, and reduction of assistance to some non-power sectors in Phase III of the EU ETS reflected the recognition that previous assistance led to windfall gains and abatement inefficiencies

Scheme and period	Treatment of generators	Treatment of non-generators	Type of assistance (tiered or uniform)
EU ETS (Phase I and II)	Included	All entities given assistance	Generally offered to all entities on uniform basis
Chinese ETS pilots	Included	All entities given assistance	Uniform
Korea	Included	All entities given assistance	Uniform
South Africa (2016-2020)	Included	All entities given assistance	Tiered based on trade exposure and the level of process emissions
EU ETS (Phase III)	Generally excluded	All entities given assistance	Uniform
New Zealand	Excluded	Limited to activities that meet eligibility criteria	Two tiers: highly and moderately exposed to leakage

Due to perceived inadequacies of using only carbon intensity and trade exposure, other criteria have also been suggested

- **Price sensitivity of consumers** – if consumers are very price sensitive, this is likely to lead to greater leakage, and vice versa
- **Nature of competition within a sector** – tougher competition in a given industry would likely lead to greater leakage and vice versa
- **Availability and cost of abatement options** – a lack of abatement opportunities at reasonable cost would likely lead to greater leakage, and vice versa
- **Carbon pricing (implicit and explicit) among competitors** – if competing jurisdictions do not have any form of carbon pricing, this is likely to lead to greater leakage, and vice versa
- **Carbon intensity of production in other jurisdictions** – if other jurisdictions are significantly less carbon intensive, then leakage would be less of an inherent concern, and vice versa

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Integrated and complimentary measures

- There are two main groups of support measures:
  - integrated measures, such as free allowance allocation;
  - complementary measures, such as cash transfers to offset carbon cost increases
- integrated measures have been the preferred approach to date as they have two key advantages:
  - incorporating support in the carbon legislation makes it transparent and can help secure political support
  - support can be designed to automatically change with carbon prices
    - e.g. the value of free allowances depends on price

Types of integrated measures

- Four types of integrated measures have been extensively used and/or discussed in literature
  - free allowance allocations (based on output, grandfathering or fixed sector benchmarks)
  - administrative exemptions
  - rebates (either direct or through changes in other tax)
  - border carbon adjustments
- These measures can all be targeted at specific sectors
  - as discussed previously, there may be merit in narrowly targeting exposed sectors

Free allowance allocations

- To date, free allowance allocation is the most common policy to address leakage
  - Approaches to free allocation can be usefully distinguished with two questions:
    - does the number of free allowances received by a firm vary (quickly) as its output changes?
    - is the number of free allowances received by a firm linked to the firm's actual emissions?
  - this gives rise to four categories of approaches to free allocation, as per the next slide
    - notably, some countries, including Australia and Korea, apply different approaches across sectors

Four approaches to free allowance allocation

		Do allocations vary in proportion to a firm's output?	
		Yes: allocations update with the firm's own output on a regular basis	*No: allocations are based on a firm's historical output with occasional periodic updating*
Do allocations vary in proportion to a firm's emissions intensity?	**Yes: allocations are directly proportional to the firm's own emissions intensity**	Virtual exemption: This would effectively eliminate the carbon price	Grandfathering: allocations are directly based on a firm's historical emissions and do not vary as output changes, except between phases
		Examples: none based on allocations	Examples: EU ETS Phases I and II; Korea (all but three sectors); Kazakhstan Phases I and II; Beijing; Chongqing; Guangdong; Hubei; Tianjin
	No: allocations are benchmarked to an independent measure of emissions intensity	Output-based allocation (OBA): Allocations are proportional to sector-wide benchmarks and a firm's current output levels	Fixed sector benchmark (FSB) allocation: allocations are proportional to sector-wide benchmarks and firm-specific historical activity levels. Adjustments for changes in output only between phases
		Examples: California; New Zealand; Australia; Korea (three sectors); Shenzhen	Examples: EU ETS Phase III

Administrative exemptions

- Administrative exemptions can be set for a number of reasons including
  - practical difficulties in coverage
  - political concerns around imposing costs on a sector
  - leakage concerns, **usually associated with a carbon tax**
- Often used for e.g. small emitters, transport emissions, land use, and waste, where it is deemed too difficult or expensive to cover them with carbon regulation
- But has been used as a way to avoid carbon leakage
  - Germany combined a broad energy tax with exemptions for energy-intensive processes
  - Finland and Denmark provided tax refunds on large proportion of their energy taxes for energy-intensives

Rebates

- Rebates (e.g. reductions in other taxes) are similar to exemptions, and can be given for similar reasons
- They may or may not be explicitly calculated to ensure the rebate results in revenue neutrality for government
- Examples include,
  - In the UK, and offset in the national insurance contribution was provided to firms affected by the Climate Change Levy
  - In Denmark, increases in energy taxes were accompanied by reductions in employers' contributions to pension fund and national insurance

Border carbon adjustments

- Border carbon adjustments have a different impact from free allowances
  - these involve a carbon price imposed at the border on emissions intensive goods, and/or rebates provided to exporters
  - a fundamental difference between BCAs and free allowances is the effective extension of the carbon price to entities outside the jurisdiction
- BCAs have not been widely implemented
  - California has a rule akin to a BCA, covering electricity importers, and considers cement BCA
  - The US imposed a BCA-like scheme with regard to ozone-depleting chemicals

Pros and cons of different options

- Each design option has its pros and cons, but, all else being equal:
  - exemptions can effectively address leakage but perform most poorly in terms of abatement incentive, and any adjustments to improve abatement incentive will reduce leakage protection
  - free allocation performs better but its merits depend on the exact approach taken
    - grandfathering is technically simple, but reducing leakage involves compromising abatement incentives, since updating and closure rules that reduce leakage also increase inventive to continuing high emissions levels
    - fixed sector benchmarking can better achieve both goals, but calculation of benchmarks is more data-intensive
    - both grandfathering and FSB carry a risk of delivering windfall gains
    - output based allocations can better target leakage, and reduce windfall gains, but reduce incentives to improve efficiency if applied to sectors not exposed to leakage
  - Rebates can be designed to resemble free allocation approaches with similar pros and cons
  - BCAs perform best in terms of reducing risk of leakage but face political, administrative and potentially legal challenges

Pros and cons of different options (ctd.)

	Grandfathering	FSB	OBA	Exemption	Rebates	BCA
Leakage prevention	Weak, unless closure rules and updating included	Weak, unless closure rules and updating included	Strong	Strong	Depends on design	Strong
Incentives to improve emissions intensity	In principle strong, but diluted when updating included	Preserved	Preserved	Not preserved	Preserved	Preserved
Demand-side abatement incentives	Preserved	Preserved	Dulled, especially if applied too broadly	Removed	Depends on design	Preserved
Administrative complexity	Easy to implement	Some complexity in establishing benchmarks	Some complexity establishing benchmarks, collating output data	Easy to implement	Some complexity	Very complex
Risk of windfall profits	Some risk	Some risk	No	No	No	No
Risk to environmental outcome	No	No	Some risk, depending on design	Yes, exempt emissions uncapped	Depends on design	No
Political and legal challenges	No	No	No	No	No	Yes

Thank You

FOR MORE INFORMATION ON THE PARTNERSHIP FOR MARKET READINESS (PMR), PLEASE CONTACT:

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All entities given assistance

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Ideal leakage policy vs. ineffective leakage policy