Heterogeneity in Supply Controls: Some Implications for Linking

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European University Institute – LIFE DICET Workshop
Fiesole, 29 November 2019

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Centre for Climate Change Economics and Policy
E·S·R·C Economic & Social Research Council
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Diversity of design elements and supply controls

Existing (and planned) ETSs differ in price levels and design elements
$\rightarrow$ reflects local conditions and visions for the role of the permit price

- absolute vs intensity-based caps (and allocation methods)
- compliance cycle (annual vs interim + true-ups)
- banking and borrowing provisions (e.g. holding limits)
- price-based controls: soft/hard, inside/outside cap, buy-back/reserve price, various price triggers and types of bumps in supply curve
- quantity-based control: the Market Stability Reserve
- other mechanisms: delegation to an indpt committee (central bank?)

Topic 3 - Linkage with supply control measures

- Lack of understanding of supply controls interactions
- Potentially, rich universe of possible types of linkages

- Possible questions:
  - Could interactions undermine effectiveness of the policy?
  - What is the required minimum level of controls compatibility?
  - Which are the supply control mechanisms that are fully incompatible?
- Contribute to informing and formalising the research questions

Existing literature: linking and design alignment

- Essentially discusses which design elements need be aligned – and to which extent – for the linked market to function
  - classify them as weak, moderate or strong barriers to linking
  - some disagreement, especially on supply-side controls
  - propagation of price and supply controls (most lenient may prevail)
  - having identical designs is not necessary. In practice: almost identical
- Also discusses desirability of attaining a fully-fledged link. If so, considers gradual and light-touch approaches to linking
  - broad spectrum: discussions (e.g. best practice sharing) $\rightarrow$ full link
  - transitional instruments: trading restrictions, indirect link via offsets

▸ references

Existing literature: linking and design alignment

Crucially:

- No modelling exercises on links between heterogeneous ETS
  - complexity: multiple equilibria arise (which one is chosen in practice?)
  - one exception: Burtraw et al. (2017) assess a California-RGGI link
    - different price triggers and types of collars, use of an exchange rate
    - 1-for-1 linking imposes Cal price floor while not binding in autarky
- No study of implications of different supply control mechanisms for ETS linkage

Ongoing work: Typology of linkages

- Q-Q link: two quantity systems with absolute caps (more next slide)
  - two sources of efficiency gains: effort sharing and risk sharing
  - can allow for unlimited B&B (hard to deal with constraints)
  - large potential gains imply linkage can be difficult to agree + primary and secondary free-rider issues (Helm, 2003; Weitzman, 2019)
  - supply controls affect prices, flows and gains (not easy: corners)
- I-Q link: two quantity systems, one intensive the other absolute
  - diversity of possible indexed instruments: which index/rule?
  - when is cap adjusted? Can be prone to arbitrage/strategic behavior
  - e.g. liquidity shocks in case of ex-post adjustments; environmental issues if I-system is output-based and net buyer
- P-Q link: one price system and one quantity system
  - tax de facto becomes an ETS with fixed price (payment certificates)
  - fixed price propagates to ETS country: negates initial policy choice
  - potentially unclear distributional aspects (which transaction price?)

Supply controls in the EU ETS

- Provisions for unlimited banking & limited borrowing
  - borrowing de facto allowed up to next year's free allocation
  - evidence of both banking and borrowing being utilized
- Soft banking collar: the Market Stability Reserve
  - unique of its kind (and may well remain so)
  - annual supply schedules are endogenous, depend on past bank levels
  - add-on cancellation mechanism $\rightarrow$ cumulative supply is endogenous
- Relative price ceiling: EU ETS Directive Art 29a
  - trigger: "if for more than 6 consecutive months the EUA price is more than 3 times the average price during the 2 preceding years..."
  - meeting of Committee convened to determine causes of price rise
  - almost triggered in 2018; now less likely (price of €75 in 2020?)
  - can it be used to implement price collar on top/in place of MSR?

Linking to the EU ETS

- Linking conditions spelt out in Art 25(1a) open to interpretation
  - "recognition of allowances between the EU ETS and *compatible mandatory* GHG trading systems with *absolute* caps"
- Examples: Australia CPM and CH ETS (both via linking Directive), Norway-Liechtenstein-Iceland (direct EEA-type implementation)
  - EEA: straight adoption though some leeway in terms of allocation
- Going through Directive gives more flexibility in design alignment
  - CH: will not participate in MSR nor adopt similar control (EU ETS is $\sim$350 times the size of CH ETS)
  - AUS: AUD 15 price floor and international credit surcharge repealed (EU ETS was $\sim$6 times the size of AUS CPM)
  - design pull dictated by relative market sizes and interests in linking

Linking with the MSR in place

- $\text{TNAC}_{\text{autarky}}$ = Supply – Demand – MSR holdings
  - cumul. supply = Ph2 bank, auctions, free allocs, NER300, offsets
  - cumul. demand = verified emissions, cancellations under Art 12(4)
  - MSR holdings = cumul. EUA stock in reserve
- Linking: adjust MSR thresholds for linked market or isolate TNAC
  - is MSR adopted by linking partner or not?
  - if yes, one joint MSR or two separate MSR?
- $\text{TNAC}_{\text{linking}}$ = Supply – Demand – MSR holdings + Net Purchases
  - *one way* to isolate TNAC from linking impacts on EUA supply/demand
  - deemed negligible for EU-CH link + CH accepts MSR impacts
- In any case: future conditions harder to gauge for participants
  - issue mitigated with price-based controls (clearer signal)
  - more or less prone to strategic manipulation and arbitrage?

Some takeaways

- Linking and level of design alignment are a matter of political choice
  - hinge on role of linking in the domestic policy agenda
  - negotiated alignment $\neq$ required alignment for joint market to function
  - partners need to understand/weigh the implications of their choices
- Link and design specific ex-ante modeling exercises required
  - such analyses are limited as of now (challenges: multiple equilibria, bounded rationality for expectation formation and trading choices)

Some takeaways

- More thinking required on impacts of supply controls in a linkage
- Consider some though experiments
  1. P-based link to P-based & hard price ceiling / floor
     - Potential infinite transfers $\rightarrow$ fundamentally incompatible
  2. P-based link to P-based & small ETS operates soft prices
     - Soft P-based control may become ineffective
  3. Q-based link to Q-based & different control triggers
     - Contradictory allowance adjustments might arise

Thank you for listening

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Some references (1/2)

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back

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◂ back