

Discussion of "Navigating international taxation: the effects of a carbon levy on shipping" by Dequiedt, De Ubeda and Mien

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5 July 2024

Summary of Paper Objectives and Findings

● Objective:

- Document impact of a possible carbon tax on maritime transport.
- Focus on tax impact on trade flows, not on tax proceeds or environmental externalities.
- Independent carbon levy on maritime transport, separate from aviation.

● Methodology:

- Simulations based on panel data (bilateral trade flows, HS2 level) for 185 countries (2012-2018).
- Multisector structural gravity model incorporating marine fuel costs.

● Main Results:

- Poorer countries more negatively impacted than richer ones.
- Modest overall effect on global carbon emissions.
- Challenging to justify the tax on fairness, efficiency, or Pigouvian grounds.

● Contributions:

- Structural analysis of international carbon tax on maritime transport.
- General equilibrium analysis for 185 countries at HS2 level.
- Informing policy debate with high-quality research.



Most ship-owning countries have seen a rise in emissions

Carbon dioxide emissions (tonnes) in 2012 and 2022 for 29 main countries of vessel ownership

	Country	2012	2022
1	China 🇨🇳	43,493,613	102,317,721
2	Japan 🇯🇵	99,628,524	101,254,900
3	Greece 🇬🇷	69,330,862	95,968,419
4	United States of America 🇺🇸	43,859,245	45,656,717
5	China, Hong Kong SAR 🇭🇰	18,822,466	39,060,933
6	Germany 🇩🇪	86,588,074	37,040,384
7	Singapore 🇸🇬	19,806,355	32,522,147
8	Korea, Republic of 🇰🇷	24,324,282	28,736,060
9	Denmark 🇩🇰	23,473,417	28,007,662
10	Norway 🇳🇴	25,748,700	26,496,768

Additional 19 rows not shown.

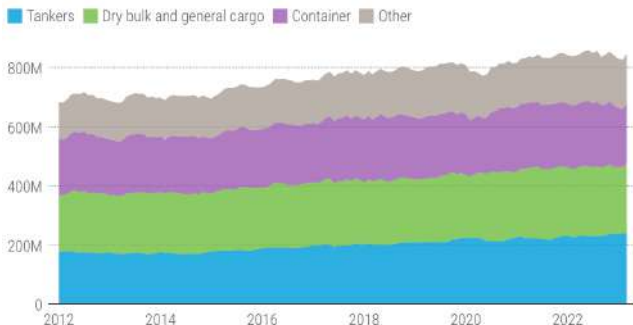
Note: Carbon dioxide emissions from vessels' main and auxiliary engines, calculated based on bunker fuel from the Automatic Identification System.

Source: UNCTAD, based on data provided by Marine Benchmark, June 2023



Shipping emissions are headed in the wrong direction

Carbon dioxide emissions by main vessel types, tons, 2012–2023



Note: The group "other" includes vehicles and roll-on/roll-off ships, passenger ships, offshore ships and service and miscellaneous ships.

Source: UNCTAD based on data provided by Marine Benchmark, June 2023.

Comment #1: Measuring the effects of carbon taxation

1 Carbon taxation is proxied by an increase in fuel price

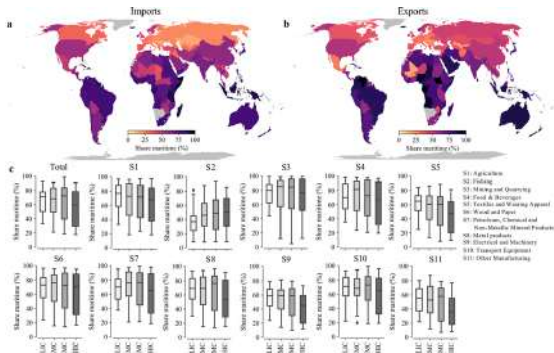
- Equivalent for the average price of heavy maritime fuel oil to increase to \$551 per ton of fuel (below its maximum value of \$664 reached in 2012)
- Is the simulated increase large enough to account for the tax impact ?
- How would transportation companies adjust their costs to remain competitive (margin behaviours)? Would the pass-through be 100% and constant over time/across partners?
- Are there non-linear effects that would make the impact more sizeable ?

2 Impact of international maritime trade flows

- Use of U.S. data to establishing for each product the likelihood to be transported by sea.
- U.S. trade is specific and we can question its representativeness for goods transportation
- Since 2010, maritime distances have decreased with the rise of intraregional maritime trade. This trend is most pronounced in Asia, with significant growth in intra-Asian routes. China, supported by neighboring countries for parts and components, is relying more on domestic production, leading to fewer imports from distant countries. How to take this regionalization into account?

Comment #2: What types of substitutions?

- The model includes substitution effects across partners (the closest being preferred after the introduction of the tax) or to alternative transportation means.
- It is shown that the geographical substitution is rather low (see Figure 6).
- But the results include an increase in CO2 emissions due to a reallocation effect from low CO2-emitting maritime transport to more polluting land and air means of transportation. Would it be realistic?

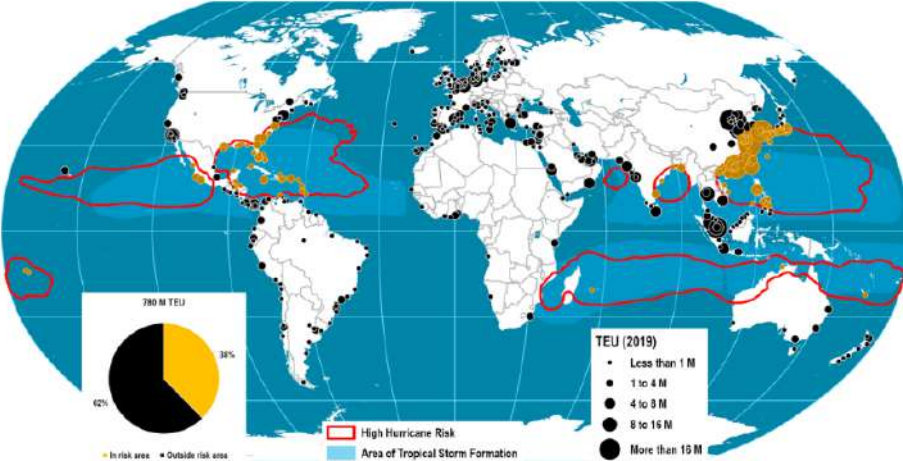


Verschuur et al. (2022)

Comment #3: Need for bigger picture?

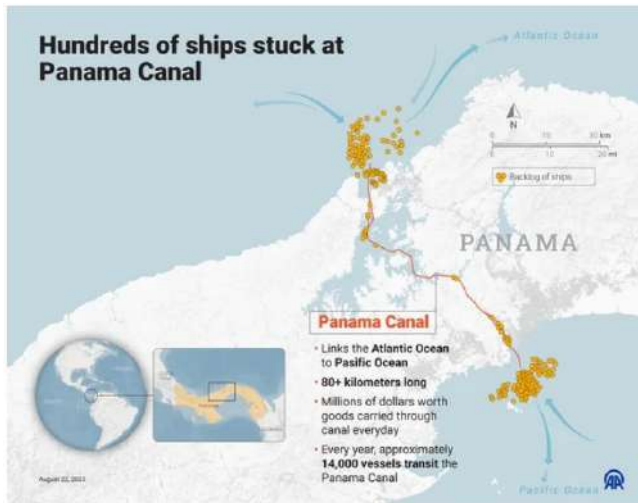
- The results are disappointing from a carbon tax efficiency perspective. From a policy viewpoint, one would expect larger effects on relocation to closest partners, or on the use of more energy efficient vessels, without necessarily reducing international trade flows.
- Key question: to what extent can we study carbon taxation on shipping in isolation ?
 - What if taxation applied to all transportation means?
 - What if taxation included in a more general carbon pricing policy on all activities and traded goods?
 - How to account for recent trend in reshoring, nearshoring or friendshoring that should weigh on long-distance shipping?
- Last but not least : Shipping is one of the activities that is the most affected by climate change. Can we really ignore environmental externalities?
 - Harbours disrupted by hurricanes
 - Panama canal traffic impeded by drought

Environmental externalities



Risk of Hurricanes for Global Container Ports 2019

Environmental externalities



Conclusions

- Excellent, well-written paper
- Great contribution in terms of methodological approach and applications to carbon taxation
- Empirical exercise conducted with rigor, which brings many valuable insights
- Policy implications of the results could be derived with more caution

Looking forward to reading the journal version!

Thank you!