

Emissions in exports versus emissions replaced by imports: testing the testing of hypotheses

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Understanding what determines the trade in emissions is important for the global negotiations about allocating responsibilities. In the first part of this study we test two competing hypotheses, the Pollution Haven Hypothesis (PHH) and the Factor Endowment Hypothesis (FEH). Each hypothesis yields a ranking of countries (based on GDP per capita for the PHH and on the capital/labor ratio for the FEH) and provides a prediction for the comparison of the emissions in average exports and the emissions replaced by average imports. The tests are carried out for any pair of two out of 40 countries (i.e. 1560 pairs of countries). For this, the extra CO₂ emissions in a country due to an increase of 1 billion USD of extra exports are compared with the reduction in this country's CO₂ emissions due to 1 billion USD of extra imports. We find that neither the PHH nor the FEH is widely supported by the empirical results. The PHH yields correct predictions in 31.7% of all cases and the FEH yields correct predictions in 36.7% of all cases.

In the second part of the paper, we examine whether any hypothesis that bases its predictions on the ordering of countries can be sufficiently corroborated. We find that the optimal ordering of countries (obtained by applying triangularization techniques) yields correct predictions in only 60.1% of all cases. The outcome is robust to changes in the underlying assumptions. We conclude that a successful prediction for the comparison of the emissions in exports and the emissions replaced by imports cannot be based on a ranking of countries (such as the size of GDP per capita or relative capital abundance).