Trade flows and Climate Talks: A trade theory view of unilateral carbon pricing

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Overview

Limiting the increase in global mean temperatures from pre-industrial levels to 2C will require drastic reductions in world greenhouse gas (GHG) emissions. In the absence of a world government, the levers of action to achieve such reductions remain with national and sub-national jurisdictions. The global public good nature of the problem has led many to study the conditions for coordination and coalition formation of self-interested jurisdictions. The present paper moves away from that representation and sheds light on the (endogenous) incentives for unilateral action in a context of international trade.

Using a stylised model of international trade, we show analytically how trade with carbon-pricing partners can affect a jurisdiction's propensity to adopt carbon pricing schemes. We then turn to an empirical investigation.

Methods

Our theoretical discussion relies on a simple 2-goods x 2-factors model of international trade with perfect competition adapted from Copeland and Taylor (2003) and Copeland and Taylor (2005). It discusses the conditions (including – but not limited to – exposition to trading partners that price CO2 emissions) under which a jurisdiction (potentially leading within its immediate region) might introduce or tighten its own carbon pricing policy.

The theoretical discussion identifies income per capita, emissions intensity of trade-exposed sectors, the scale of those sectors (i.e. value added as a share of total value added) and exposure to carbon pricing trading partners as key elements of a jurisdiction's decision to price carbon.

Using CO2 emissions data from the International Energy Agency, Value Added data from the United Nations Statistics Division and CO2 prices and coverage information collected in an earlier study (Dolphin et al., 2016), we construct

To test the relationship between these variables and the presence and stringency of carbon pricing policies we use panel data analysis over the period 1990-2013 and over 138 jurisdictions. To address the potential endogeneity issues present in some of our regressins, we use instrumental variables approaches presented in Frankel and Rose (2005) and Levinson and Taylor (2008).

Results

Our preliminary empirical results lend support to the hypothesis that a higher share of trade with carbon pricing partners increases the stringency of the home country's environmental regulation. Multiple channels of transmissions (relating both to international trade and international relations dynamics) might explain this effect and those are investigated in detail in this study. Similarly, and as evidenced by earlier related literature, income per capita, the CO2 intensity of trade-exposed sectors and the scale of these sectors in the total economy also play a determining role.

The originality of our results lies in the combination of standard international trade theory with international political economy and international relations considerations.

Conclusions

In a world where multilateral approaches toward tackling climate change have at best produced moderate results, it becomes increasingly important to understand motivations for unilateral and uncoordinated action. In particular, it is essential to understand the potential costs and benefits of such actions when countries (or sub-national jurisdictions) are interacting in international markets.

Our results broadly support the view that the intensity of trade with carbon pricing trading partners encourages jurisdictions to introduce or strengthen their own carbon pricing mechanisms.

References

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