Mitigating Competitiveness Effects in Climate Policy: Border Tax Adjustments or Integrated Emission Trading?

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(1) Overview

In 2007, the European Union (EU) has agreed on an ambitious plan for the post-Kyoto era, envisioning a reduction of carbon dioxide emissions in Europe by 20 percent versus 1990 levels in 2020. To achieve that goal, the EU builds on the administrative framework of the emission trading system (ETS) which was established in 2005 and will enter its second phase in 2008. Obviously, more stringent environmental policies raise concerns on competitiveness, particularly to those sectors that are energy-intensive, export-oriented and not covered by globally harmonized policies but subject to unilateral actions: Companies from the EU member states facing high prices of emission certificates might find it difficult to compete against foreign companies unconstrained by such environmental regulation. As a remedy for this apparent problem, a range of alternative policy options may be applied. In this paper we investigate two different policies for mitigating detrimental effects of climate policy on domestic competitiveness and leakage rate: border tax adjustments (BTA) and integrated emission trading (IET). Whereas under the former both tax compensation for exporters and tariffs for importers are quantity-based, the latter system envisions trade in emission certificates for any company that intends to sell its goods in the domestic market.

(2) Methods

We first develop a simple analytical 2x2 model in order to lay out the theoretical background for our numerical analysis of both instruments. For our numerical analysis, we build on the *PACE* model (*Policy Assessment based on Computable Equilibrium*), a large-scale CGE model of international energy use and global trade (for details and an algebraic formulation of the core model see Böhringer

and Lange, 2005). The model reflects the key features of the European ETS from a single country perspective: EU Member States are committed to specific carbon emissions constraints $\overline{E}_r$ which are agreed upon. Each of these countries must specify a cap $\overline{e_r^{ETS}}$ and the allocation rule for free emissions allowances to energy-intensive installations in sectors that are eligible for international emissions trading. Assuming that the EU over only energy-intensive industries implies that complementary domestic abatement policies are necessary for the non-covered sectors in order to comply with the remaining national emissions budget $\left(\overline{E}_r - \overline{e_r^{ETS}}\right)$.

(3) Results

In our numerical analysis, we quantify the implications of unilateral EU carbon policy in 2020 for economic welfare, implied carbon taxes, carbon leakage, and selected sector-and country-specific competitiveness indicators for the EU-27 and non-EU regions under the alternative scenario sets, covering the BTA and the IET regimes respectively.

(4) Conclusions

Our analytical and numerical analysis suggests that the BTA regime is more preferable in terms of reducing negative sectoral competitiveness effects, while the IET regime is able to minimize the global leakage rate: More pronounced improvements in competitiveness for selected energy-intensive industries in the EU-27 under the BTA regime may induce a more pronounced increase in global emissions as under the IET regime.

Selected References

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