UNILATERAL CLIMATE POLICY: CAN OPEC RESOLVE THE LEAKAGE PROBLEM?

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In the absence of a global agreement to reduce greenhouse gas emissions, individual countries have introduced national climate policies. Unilateral action involves the risk of relocating emissions to regions without climate regulations, often referred to as emission leakage. Emission leakage takes place mainly via two channels. One channel is through markets for Energy-Intensive Trade-Exposed (EITE) goods such as steel, cement and chemical products. When climate policies are implemented in one country, production of such goods may relocate to countries without climate policies. The other main channel is through international fossil fuel markets. Climate policies typically lead to reduced consumption of fossil fuels, which implies lower international fuel prices, stimulating demand in other countries.

Although most focus has been on the former leakage channel, most numerical studies conclude that leakage through fossil fuel markets are at least as significant. All previous numerical studies have, however, disregarded OPEC's potential market power in the oil market. OPEC has a market share of around 40%, and its share of remaining global reserves is even higher.

In our study we use a detailed computable general equilibrium model of the global economy to analyse emission leakage through the oil market, given different assumptions about OPEC's behaviour. We consider unilateral climate policies by the European Union (EU), consisting mainly of a price on CO_2 emissions (either through a tax or through a quota market). Due to the global nature of the climate change problem, we assume that the EU is concerned about global emissions, not just domestic emissions. Hence, the EU has a target for *global* emission reductions to be achieved through unilateral abatement action. Lower leakage rates then imply that less emission abatement is required within the EU to achieve a given global emission reduction target.

Our numerical analysis suggests that OPEC's behaviour has substantial implications for the effects triggered by EU's climate policies. If OPEC maximizes joint profits of its members, we find that leakage through the oil market may turn negative, as OPEC finds it profitable to cut back on its supply to such a large degree that the oil price increases rather than decreases. Why does OPEC reduce its supply more in this case compared to the case where OPEC acts competitively? OPEC sees that, given the EU's climate target, a big cutback in oil supply will reduce the CO_2 price that is needed for the EU to reach its target. With higher oil prices, OPEC is keeping a larger share of the oil rents, that is, the differences between the end-user prices and the costs of production and delivery.

As OPEC exerts market power and responds with higher oil prices to unilateral EU climate policy, the overall emission leakage is drastically reduced compared to a setting where the oil market is perceived competitive. The leakage rate, measured as the increase in foreign emissions divided by emission reductions in the EU, drops from 18 to 9 percent. If the EU in addition implements carbon tariffs on EITE goods (i.e., emissions embodied in EITE imports are taxed at the EU CO_2 emission price), the leakage rate drops to 4 percent (for the case of competitive OPEC behaviour, tariffs lead to a decline in the leakage rate from 18 to 14 percent).

If the EU rather imposes a fixed CO_2price, irrespective of changes in global emissions, OPEC has less willingness to cut back its supply as it cannot influence the division of the oil rent to the same extent. The oil price declines, and leakage rates are almost the same as when OPEC acts competitively.

To conclude, OPEC's behaviour can have substantial effects on the extent of emission leakages from unilateral climate policies that pursue emission targets. However, OPEC's strategic influence declines if the unilateral climate policy is based on fixed CO_2 emission prices.