Green energy shift and international trade

Addressing the challenges resulting from climate change on the economy and the environment is one of the top priorities of the new European Commission headed by Ursula von der Leyen which took office on 1 December 2019. For Europe to become the world's first climate-neutral continent by 2050 is an ultimate priority of the so called European Green Deal. To achieve this, the European Commission presented the most ambitious package of measures which contains key policies actions ranging from serious cuts in greenhouse emissions, to investing in cutting-edge research and innovation, to taking measures sustaining Europe's natural environment.

Accompanied by investments in green technologies, sustainable solutions and new business structures, the Green Deal can be seen as a new EU growth strategy. The EU should be transformed into a fair and inclusive society with a modern resource-efficient competitive economy where there are no net emissions of greenhouse gases in 2050 and economic growth is decoupled from resource use. Among many others one concrete measure concerns the impact the transport sector has on the environment and on human health. The Green Deal states clear that the price of transportation should reflect its environmental impact and for that reason fossil-fuel subsidies should be put to an end. More concretely in the context of revising the Energy Taxation Directive, the Commission would closely look into current tax exemptions.

Against this background the purpose of the current paper is to assess the impact the removal of fossil fuel subsidies will have on the environment and international trade. More specifically we explore two scenarios: (i) the shift from fossil fuel subsidies to the green energy sector and (ii) the use of these subsidies as a lump sum for building a green technology fund to foster the energy efficiency in terms of investment in new renewable energy technologies.

The model used for simulating these scenarios is a model which represents a merge of the GDynE (the energy version of the dynamic GDyn) developed by Golub (2013) and improved by Markandya et al. (2015) with the new GTAP-Power (Peters, 2016), which introduces in GTAP a detailed representation of the renewable electricity sector. It relies on the GTAP-database 10 with a base year 2014. The model is a recursive dynamic type that allows the simulation of long-term policies, including an assessment related to different timing in implementing climate policies. In that model electricity generating technologies are: Coal, Gas, Oil, Hydro, Wind, Solar, Nuclear and other power sources.

Our analysis of the removal of fossil fuel subsidies will focus on the 10 years up to 2030 where fossil fuel subsidies will be replaced by green energy sector subsidies (scenario 1) or gradually diverted to fund green technologies to produce electricity in more efficient way. In that respect the current paper represents an attempt to investigate some of the dynamics arising in climate policies related to compensatory measures. In terms of modelling results we will focus on the impact on CO2 emissions as well as on the impact the green shift on international trade.

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