Trumpâ€™s climate policy reversal: a dynamic multisectoral analysis for the US

Topic: CGE and Econometric Input-output Modelling (2)
Author: Ludovica Almonti
Co-Authors: Francesca SEVERINI, Stefano Deriu

President Trumpâ€™s announcement regarding the United Statesâ€™ withdrawal from the Paris Agreement places the nation among the countries â€“ Iran, Yemen, and Libya â€“ that refrain from contributing to the global initiative to combat climate change. This decision follows Trumpâ€™s initial withdrawal from the Agreement during his first term in 2017, and it coincides with a â€˜national energy emergencyâ€™ declared by the President, which is aimed at reversing several environmental regulations put forth during the Biden administration. These actions are likely to exacerbate global environmental challenges, particularly in light of the ongoing climate disasters, including droughts, wildfires, and superstorms, that the US is currently facing. Moreover, the Nationally Determined Contribution (NDC) to reduce greenhouse gas (GHG) emissions by 26-28% below 2005 levels by 2025 is thus compromised.
Concurrently, the United States is experiencing an unprecedented surge in fossil fuel production. Since 2016, there has been a 70% increase in American oil production, and the United States has emerged as the worldâ€™s leading producer and exporter of oil. A similar trend is evident in the export of liquefied natural gas (LNG), which has grown exponentially from negligible levels in 2016, propelling the United States to the forefront of the global LNG market. The new administration asserts that the President will also put an end to Bidenâ€™s â€œGreen New Dealâ€•, which allocated billions of dollars into clean energy. The actions and intentions of President Trump have the potential to jeopardize the current efforts to transition towards a greener energy and environmentally sustainable production and consumption processes, not only in the United States, but also in all countries involved in the Paris Agreement.
The magnitude, scope, and temporal extent of these decisions require the use of advanced economic instruments, characterized by a high degree of disaggregation and detail, to estimate their effects and delineate the trajectory the country is pursuing. The evaluation of the aggregate, disaggregated, direct, indirect, and induced effects of environmental policies over time can be achieved by developing sophisticated modeling tools that can quantify the impact of the US withdrawal from cleaner energy transition pathways and highlight their implications in terms of social, economic, and environmental sustainability. Dynamic Computable General Equilibrium (CGE) models, calibrated on multisectoral databases, are regarded as a comprehensive numerical framework for estimating the broad socioeconomic impacts of shifting policy directives over time. These models integrate the general equilibrium theory with rigorous microeconomic foundations regarding the optimizing behavior of economic agents and the analysis of equilibrium conditions in the defined time frame. By offering counterfactual ex-ante comparisons in each period, DyCGE models enable the assessment of the tendency of supply-side, demand-side, and distributional effects of policy measures.
The mapping of the transmission mechanisms between the US economy and the environment is performed by constructing the Environmental Social Accounting Matrix (ESAM) for the US, as well as by the development of the DyCGE model based on the ESAM. Indeed, the database and the model can be suitably adapted to accommodate the quantification of the impacts of Trumpâ€™s anti-climate policy interventions on the full circular flow of income and on key environmental and social variables in disaggregated real and nominal terms. These variables encompass, but are not limited to, emissions associated with sectoral production, natural and energy resources absorbed by production processes as intermediate inputs, private consumption, and welfare. The environmental module involves supplementing the SAM with a set of rows and columns that report GHG emissions by production activity and by commodity for final demand.

The present study proposes a series of simulation scenarios designed to investigate the effects of reforms aimed at dismantling previous environmental protection measures during the duration of Trumpâ€™s second administration. The ESAM-based DyCGE model for the US is the specific analytical instrument that allows the assessment of the fiscal policies aimed at cutting the climate-oriented public expenditure, triggering changes in production processes and in the composition of final demand over time. The change in production by activity would affect income generation by primary factors and the primary and secondary distribution of income by institutional sectors in each period. This dynamic interplay between production activities has the potential to influence the formation of disposable income for institutional sectors. Furthermore, it may result in varied patterns of allocation of savings and consumption over time, which could have implications for sustainability and economic growth.