The consequences of global reshoring trends in the EU carbon emissions

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Author: Mateo Ortiz
Co-Authors: Luis A. LOPEZ, Ã•ngela GarcÃ-a-Alaminos, Maria Angeles Cadarso

Recent events, such as the Covid-19 pandemic, trade wars and changes in policy orientation have accelerated some previous trends in international trade and global value chains (GVC). The exposed vulnerability of GVC is driving firms into a trend of returning part of the activities that were previously delocalised to faraway countries back to the regions where some of those production stages previously took place. These processes, referred by the literature as re- and backshoring, imply shortening supply chains to make them more regional and domestic rather than global, aiming at increasing sustainability and resilience of GVC. Current relocation patterns imply bringing back production not only to the home economy, but also to close economies in a geographical, political or economic sense, which is referred as nearshoring or friendshoring by the literature

Changes in policy orientation in western countries are contributing to this evolution. For instance, the EU's Open Strategic Autonomy and the European Chips Act, whereby the EU seeks to increase its autonomy in the supply of strategic goods through reshoring and supplier diversification programs and alliances. Increasing the resilience of the GVCs of companies and countries is linked to another global challenge: the energy and digital transition toward low-carbon economies.

In this article, we use an environmentally extended multi-regional input-output model (EEMRIO) to assess how the reshoring trends linked to the EU's Open Strategic Autonomy affect the carbon footprint of the EU. The core dataset of our model is the OECD inter-country input-output database which is combined with detailed international trade data from Eurostat (4-digit code in HS nomenclature) to identify the trade partners that currently concentrate the supply of strategic products to the EU. The integration of international trade data at product-detail level allows us to identify and isolate the proportion susceptible to reshoring strategies within the broad aggregate sectors of the input-output framework. Thus, we apply an innovative "partial" source shifting technique to evaluate the net effect that the relocation and diversification of suppliers will have on global emissions.

We will evaluate whether backshoring strategies are more (or less) effective than nearshoring strategies in reducing the EU's total carbon footprint and whether these policies will mainly affect CO2-intensive industries or relatively low-carbon industries. Besides, we quantify the trade-offs and synergies between the resilience goal and the carbon mitigation one caused by new trade trends resulting from industrial policy reorientation.

Our preliminar results show that both backshoring and nearshoring result in net savings of the EUâ€™s carbon footprint for the five selected strategic products. Reshoring results in a minor increase in emissions in the EU countries and, therefore, has a minimal effect on the emission reduction targets committed by the EU. However, as it does significantly reduce imported emissions, reshoring/nearshoring reduces the climate change risk of sectors that import the relocated products by reducing their carbon footprint, so they contribute to the goal of â€œde-riskâ€• expressed by European Commission president Ursula von der Leyen. These results imply that pursuing the goals of the EUâ€™s Open Strategic Autonomy according to the selection of suppliers can reveal synergies with the environmental goals and the fight against climate change. Reshoring and nearshoring would result in a diversification of suppliers for the analyzed products, as for all except for Iron and Steel, the primary supplier represents 40% or more of the total imports.

This study highlights the need to assess the environmental impacts of relocation and resilience-seeking decisions by companies and governments. In particular, the development of an EEMRIO model combined with detailed international trade data is useful to map the complexity of global carbon chains and to disentangle the sectors supplying emissions from international trade. The relevance of the study for scholars and policy professionals is that the results obtained are useful for analyzing the existing relationships between building EU resilience, foreign trade, and climate change policies, with the aim of pursuing their coordination and the reduction of conflicts of objectives between these policies in the design of future trade-restructure actions.