FOUNDATION FOR FUTURE SUPPLY CHAIN

The Deglobalisation and Decarbonisation of Supply Chains

By Alan McKinnon

THE NEED FOR NEW THINKING ...

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THE DEGLOBALISATION AND DECARBONISATION OF SUPPLY CHAINS

Discussion of supply chain futures often gravitates to two subjects: the likelihood of globalisation going into reverse and the challenge of meeting Net Zero emission targets. They are usually discussed separately, but in this short article I will explore possible connections between them. If deglobalisation becomes a pronounced trend, would it help or hinder the decarbonisation of supply chains?

Discussion of deglobalisation often focuses on distances, mainly between final assembly points in the Far East and distribution centres in Europe and North America, and overlooks the ways in which deglobalisation would affect the configuration of upstream supply networks. This is a critical distinction when considering the possible effects of deglobalisation on the carbon intensity of international supply chains because these effects relate to emissions not only from transport, but also from production operations at each node in the chain.

TRANSPORT EMISSIONS

Recent modelling by the International Transport Forum (2023) suggests that full implementation of current public policies would see total CO2 emissions from freight transport rise by 28% by 2050. One of many ways of constraining this growth would be to reduce the average distance each product travels on an end-to-end supply chain basis. To what extent could deglobalisation help to achieve this?

Risks of supply chain disruption, which deglobalisation supposedly aims to mitigate, are mainly country- and/or supplier-specific and can have a relatively weak correlation with the distances over which products are transported. It is also debatable if deglobalisation will cut the number of links in multi-tier supply chains. This would require a vertical integration of upstream production processes in fewer locations. Where, for resilience reasons, a supply chain is diverted from a country or region posing a heightened risk, its total number of links would typically unchanged.

If deglobalisation did significantly reduce the average distance that each international consignment was moved between raw material source and final point of sale, what level of carbon savings might we expect? Around 80% of the international trade in goods is carried by sea (UNCTAD, 2022) and shipping is by far the least carbon-intensive freight transport mode. Per tonne of product transported, shortening a containerised maritime movement by, say, 1000 km would save only around 16kg of CO2 (DESNZ and DBEIS, 2023), by

comparison with the 900kg of CO2 emitted by a single passenger on a one-way flight from London to New York (https://co2.myclimate.org/en/flight_calculators/new). Also, as both deglobalisation and decarbonisation are essentially longer term processes, by the time the world substantially deglobalised, if ever, emission reductions from each 1000km of supply chain compression would be much smaller than today.

PRODUCTION EMISSIONS

Between 50% and 80% of the emissions embodied in international trade across a range of manufactured products most likely to be subject to deglobalisation pressures, including electronics, textiles, chemicals and processed food, come from production processes rather than international freight transport (WTO, 2021). This highlights the importance of international variations in the carbon intensity of production to an assessment of the impact of deglobalisation on supply chain emissions. In a deglobalised world would the production-related emissions embodied in the products flowing through international supply chains be higher or lower than today?

As risk-reduction is one of the main drivers of deglobalisation, the answer to this question will partly depend on the relationship between the supply chain risk that a country poses and the carbon intensity of its production. For deglobalisation to make a large contribution to supply chain decarbonisation, it would be preferable for countries deemed to be risky sources of traded products also to have a relatively high carbon intensity. Removing them from a global value chain would then simultaneously cut risk and emissions. In reality, this risk-emission balance will vary widely by country. In the case of climate risk, there is a fundamental imbalance in many less developed countries between high exposure to extreme weather events and very low levels of greenhouse gas emissions per capita and per $ of GDP. Superficially, China may be considered to exhibit a close correlation between risk and carbon emissions. If deglobalisation involves reducing the dependence of value chains on China as a risk mitigation strategy, there might be emission-reduction co-benefits. These benefits may be short-lived, however, and diminish rapidly during the time scale required for extensive deglobalisation, given the rate at which China's power sector is predicted to decarbonise (Murtaugh, 2023).

CONCLUSIONS

Carbone and Moatti (2021) argue that 'it is necessary to move beyond an overly simplistic view whereby reshoring is synonymous with sustainability'. To move the discussion forward, I have reframed it in terms of the two Ds that may reshape supply chains in the medium to long term, deglobalisation and decarbonisation. It seems that they are probably not as well aligned as some environmentalists would like to think. It would be premature, however, to draw conclusions at this stage. Much more research is needed to improve our understanding of the inter-relationship between these two supply chain megatrends.

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ABOUT

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