

Estimating embodied risk within global supply chains

Topic: International Trade II

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Global supply chain risk has received renewed attention in recent years in a push to improve supply chain efficiency and reduce the adverse impacts felt by companies and end consumers as a result of disrupted supply. In addition, supply chain management practices such as just-in-time, virtual inventory methods and a reduction in the number of distribution facilities has had the effect of increasing supply chain risk. Despite this, global supply chains remain opaque and still not well understood by practitioners or company management. In light of this the following question will be answered: what industries and countries have the highest levels of supply chain risk? In order to accomplish this, a new metric is developed and combined with the EORA global multi-regional input output model (GMRIO) and defined as 'embodied risk'. Several methods are adapted from important developments within environmental impact analysis which are used in the development and synthesis of an embodied risk metric for both industries and countries within EORA. The method requires the creation of a risk based vector for each country and industry within the MRIO from which total embodied risk is then estimated. Structural Path Analysis with Taylor series expansion is then used to explore risk at different tiers in the global supply chain. The introduction of a new metric for total embodied risk will provide company management and practitioners of supply chain risk management with new data on the levels of risk in different supply chains previously absent or hidden from existing supply chain risk analysis.