Clean Production, Dirty Sourcing: How Embodied Emissions Alter the Environmental Footprint of Exporters*

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Abstract

International trade allows firms to outsource emissions through global supply chains, raising the question of whether exporters – the firms driving globalization – are truly cleaner than domestic producers. We show they are not: once emissions embodied in sourced inputs are included, the conventional exporter's environmental premium reverses, challenging the view that trade reallocates activity toward cleaner firms. Using administrative firm-level data and customs records for German manufacturers combined with fuel- and product-specific emission factors, we construct carbon footprints that include both direct production-related emissions and those embodied in domestic and international supply chains. Four stylized facts emerge: (i) embodied emissions account for more than two-thirds of firms' total emissions; (ii) exporters' production involves disproportionately more of such emissions, particularly via international sourcing; (iii) exporters appear cleaner in production but dirtier in total; and (iv) at the intensive margin, export-demand increases reduce exporters' production-related but not total emission intensity, consistent with substitution from energy toward intermediate inputs. A heterogeneous-firm sourcing model rationalizes this empirical evidence by highlighting the joint role of importing and exporting on firms' emissions footprints. Our findings highlight the importance of accounting for embodied emissions when evaluating the environmental consequences of trade liberalization and designing climate policy.

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