The Global Allocative Efficiency of Deforestation

Prakash Mishra*

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Abstract

This study quantifies the impact of a global Pigouvian tax on carbon emissions from agricultural deforestation on the levels and spatial allocation of deforestation. Extending a classic trade model, I micro-found a measure for general equilibrium abatement costs. I estimate all key model elasticities, including the first global deforestation elasticity to agricultural rents at 0.12 (0.04, 0.48). In counterfactuals, a $51 Pigouvian tax would have abated 75% of realized deforestation damages between 1982-2016 as land reallocates away from agriculture. General equilibrium channels raise abatement costs by 50% relative to previous partial equilibrium estimates. Absent gains from trade, abatement costs would double. Finally, I decompose deforestation into an effect of trade and an effect of geography. Trade liberalization since 1980 has driven a 0.31% increase in deforested area, or 140,000 km^2, lowering gains from trade by 13%.

JEL codes: Q56, Q57, F18, F14

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