

Cows and Trees

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Abstract:

The Brazilian Amazon plays a crucial role in regulating global climate and preserving biodiversity, yet it faces mounting pressures from deforestation driven by cattle ranching. The expansion of pastures, fueled by global beef demand, is shaped by the dual role of cattle as both consumption good and capital stock. This duality leads to nontrivial dynamic responses.

To address this, we develop a structural model to examine how ranchers' land use decisions respond to short- and long-term beef price changes, accounting for deforestation costs, herd dynamics, and price expectations. Using panel data from 2000--2020, the model estimates reveal that deforestation is inelastic to temporary shocks on beef prices but highly elastic to permanent price changes. We also show how conventional reduced-form regressions fail to distinguish between short- and long-run effects. Our findings highlight the importance of accounting for long-term dynamics in policy evaluations, particularly for interventions targeting deforestation and carbon emissions.