

Enterprise Linkages and Triple Bottom Line Performance in China: A Spilloverâ€“Feedback Analysis of Sustainability Gains and Costs

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This study examines structural misalignments in the generation and transmission of sustainability gains and costs arising from interactive enterprise linkages in China. Specifically, we analyze how the triple bottom line (TBL), covering economic, social, and environmental dimensions, is generated and transmitted bidirectionally among domestic-owned enterprises (DOEs), foreign-invested enterprises (FIEs), and Hong Kong, Macao, and Taiwan-invested enterprises (HMTs) across China's four major economic regions.

Methodologically, we develop a generalized four-type enterprise spilloverâ€“feedback framework, and a reciprocal creationâ€“absorption coupling coordination model. Using an interprovincial inputâ€“output database that distinguishes enterprise ownership structures and provincial carbon-emission-intensity data for 2002, 2007, 2012, and 2017, we trace TBL performance, measured by value added, labor compensation, and embodied carbon emissions, across inter-enterprise and interregional production networks.

The results reveal pronounced ownership and spatial asymmetries. DOEs serve as the primary drivers of economic expansion through strong internal multiplier effects, exhibiting a high-gain, high-cost pattern characterized by substantial carbon retention. In contrast, FIEs and HMTs display a high-gains, low-cost configuration, relying more heavily on cross-ownership supply-chain spillovers to generate economic labor compensation absorption while shifting part of the environmental burden outward. Sectorally, commercial services produce relatively high net TBL gains, whereas manufacturing remains associated with comparatively low-efficiency sustainability performance. Spatially, the Eastern and Central regions characterized by net TBL gains absorption, externalized costs. while the Western and Northeastern regions bear disproportionately higher environmental costs relative to their gains. Coupling-coordination results further indicate a transition from FIEs- and HMTs-led enclave-type coordination toward a more integrated balancing increasingly supported by DOEs upgrading.

This study contributes to the literature in two respects. First, it extends the conventional DOEâ€“FIE analytical framework by incorporating HMT enterprises and establishing a four-ownership analytical perspective. Second, it integrates economic, labor, and environmental performance within a unified spilloverâ€“feedback framework, enabling the systematic identification of cross-ownership and cross-regional TBL transmission mechanisms. These findings suggest that achieving coordinated sustainable development necessitates internalizing the systemic impacts of bidirectional spillover-feedback effects within enterprise linkages to resolve spatial-ownership mismatches in TBL performance.