

Does AI Preparedness Alter the Sustainability Costs of Economic Disasters?

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Abstract:

This paper examines whether countries' preparedness for artificial intelligence (AI) conditions the impact of economic disasters on sustainable development. The purpose of this study is to investigate the role of AI preparedness in shaping countries' resilience to economic disasters. The objective of the study is to empirically assess how economic disasters affect sustainable development outcomes and whether these effects differ across countries with different levels of AI preparedness. Building on the peak-to-trough disaster identification framework, we analyse a cross-country panel covering major economic disasters, including the COVID-19 shock, and three complementary sustainability indicators: adjusted net savings, the Human Development Index, and the SDG Index. AI preparedness is measured using the IMF Artificial Intelligence Preparedness Index and treated as a structural, time-invariant country characteristic. We estimate two-way fixed-effects panel models with country and year fixed effects and clustered standard errors, distinguishing between disaster onset and disaster duration to capture dynamic adjustment processes. The results confirm that economic disasters are associated with significant short-run losses in economic and social dimensions of sustainable development. Contrary to a simple resilience narrative, AI preparedness does not systematically mitigate these losses. Instead, higher AI preparedness is associated with sharper short-run declines in human development at disaster onset, consistent with faster but socially costly adjustment dynamics. No significant moderating effects are found during prolonged disaster periods. Overall, the findings suggest that AI preparedness shapes the timing rather than the direction of sustainability impacts following economic disasters. Digital readiness alone does not provide immediate protection against sustainability losses and should be complemented by social and labour-market policies to support inclusive and resilient development paths.

Keywords:

Economic disasters, Artificial intelligence preparedness, Sustainable development.