

Achieving regulatory interoperability:

a framework for compliance mutual recognition in AI sandboxes between the EU, United States, and China

Mengmeng AN

Research Question

How can compliance mutual recognition be achieved among AI regulatory sandboxes across jurisdictions with divergent legal frameworks, regulatory standards, and data governance regimes?

Background

- The rapid advancement of AI intensifies the regulatory challenge of balancing innovation and safety.
- Regulatory sandboxes provide a controlled environment for AI experimentation under regulatory supervision.
- However, fragmented legal frameworks and divergent compliance standards across jurisdictions impede the mutual recognition of sandbox outcomes.
- The absence of shared assessment criteria undermines regulatory trust and constrains cross-border cooperation in AI governance.

Key Findings

- The EU AI Act establishes a unified regulatory sandbox framework that enables mutual recognition among Member States, while offering limited pathways for recognition beyond the EU.
- In the United States, state-level sandbox pilots provide regulatory flexibility, but the absence of a comprehensive federal framework complicates cross-border recognition of sandbox outcomes.
- In China, local sandbox pilots generate valuable regulatory experience, yet cross-border cooperation remains constrained by data governance and privacy requirements.
- Across jurisdictions, divergent compliance assessment standards and fragmented recognition mechanisms undermine regulatory trust and hinder cross-border collaboration.

Theoretical Contributions

- This study reconceptualizes AI regulatory sandboxes as instruments of regulatory interoperability, rather than purely domestic innovation tools.
- It advances the concept of compliance mutual recognition as a legal mechanism for facilitating cross-border cooperation in AI governance.

Research Methodology

- This study adopts a comparative legal analysis to examine AI regulatory sandbox frameworks in the European Union, the United States, and China.

Future Research

- Further empirical investigation through case studies and interviews with regulatory authorities.
- Exploration of multilateral governance frameworks for cross-border AI regulatory experimentation.
- Development of harmonized criteria for compliance evaluation in international AI sandbox cooperation.