**Imposition of sanctions: A game theory analysis**

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Economic sanctions have become a primary tool for countries seeking to enforce international norms and deter perceived violations of international law. The increasing frequency and scope of unilateral sanctions [1][2], particularly by the United States, the European Union, and other Western nations, highlight the necessity of a strategic framework to analyse their effectiveness. This paper employs game theory, particularly the repeated sanctions game, to assess the strategic decision-making of both the sanctioning and the sanctioned states.

Two models are examined: a single-interaction game with no future expectations and a repeated game with long-term consequences. The single-interaction model results in a Nash equilibrium where the sanctioned state transgresses, and the sanctioning state refrains from imposing sanctions due to immediate costs outweighing short-term benefits. However, this fails to explain real-world behaviours, where sanctions are often applied despite their economic drawbacks. The repeated game model incorporates future costs and benefits, revealing a subgame perfect equilibrium where rational states impose sanctions to establish a credible deterrence. This model suggests that the perceived necessity of sanctions stems from their role in shaping future interactions rather than their immediate impact.

Empirical comparisons with data from the Global Sanctions Database (GSD) [4] provide insights into the extent to which theoretical assumptions align with real-world sanctions outcomes. While there is significant convergence between theory and practice in terms of strategic deterrence, divergences arise due to factors such as political pressure, diplomatic constraints, and economic interdependencies. The analysis also highlights unintended consequences of sanctions, including economic retaliation, trade realignments, and strategic adaptation by sanctioned states [3].

The findings indicate that while sanctions are a necessary instrument for maintaining international order, their effectiveness depends on the ability to sustain credible commitments and minimize collateral economic and political damage. The paper concludes that game theory provides a robust framework for understanding sanction dynamics, though additional refinements incorporating asymmetric information and multi-actor decision-making would enhance predictive accuracy.

**Literature**

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