

Secondary Section

Secondary Section 80th Annual MPSA Conference/48. International Security

Title

A power law approach to predicting international conflicts: Lewis Fry Richardson revisited.

Brief Overview

This paper introduces a non-linear prediction model of armed conflict that incorporates a power-law formula in the underlying statistical model.

Abstract

This paper introduces a non-linear prediction model of armed conflict that incorporates a power-law formula in the underlying statistical model. As Lewis Fry Richardson famously pointed out, the size of the war, measured by battle death, is known to follow a power law distribution. In our previous study (APSA2021 Okamoto et al.), we have revealed that the inter-conflict interval (ICI), an interval between conflicts in the same dyad, also follows a power-law distribution rather than a Poisson process. We incorporated this special feature of the data into non-linear prediction models of armed conflicts and evaluated how the incorporation improved the predictive performance. We first replicated the neural network model introduced in the pioneering work of Beck, King, and Zeng (2000) and then mathematically fused a power-law formula to their underlying statistical model. We evaluated the performance of our model by using Beck et al.'s model and the logistic model as the baseline models. The results were promising. Our model substantially outperformed the baseline models. This paper's focus is on accommodating a statistical feature of the data to improve the predictive performance; we believe we can, in the future, further improve the performance by updating the machine learning algorithm as well.

Keywords

Interstate Conflict, Conflict Prediction, and Power Law

Research Interests**Keywords**

Interstate Conflict, Conflict Prediction, and Power Law

Research InterestsConflict Processes
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