

Having more allies may decrease a country's power

June 26 2018

Researchers at Yale University have found that the more allies a country has, the less power it has. The authors say the findings have potential implications for current events.

The scientists published their results in the July issue of *IEEE/CAA Journal of Automatica Sinica (JAS)*, a joint publication of the Institute of Electrical and Electronic Engineers (IEEE) and the Chinese Association of Automation (CAA).

The scientists developed a simple, yet sophisticated, computer game to examine relationships between countries and the resulting strategic environments. "We have developed a power allocation game to study countries' strategic interactions in a complex environment," said Yuke Li from Yale University. Dr. Li and Prof. A. Stephen Morse, the Dudley Professor of distributed control and adaptive control in electrical engineering at Yale University, used the game to ask if having more allies in a networked, strategic environment will always be beneficial to a country in terms of power allocation outcomes. "The answer is, surprisingly, no. This is especially so for a country without sufficient power to mediate between the conflicts among its potential allies."

The researchers call their analysis a game on signed graphs, which is an emerging field in political science, according to Li. A graph becomes "signed" when each edge, or node, has a positive or negative sign. In Li and Morse's work, a positive node represents a friendly relationship, while a negative node translates to a non-friendly relationship.

"A signed graph can be used to describe a strategic environment in international relations, where cooperative and conflicting elements coexist," the authors said of the power-allocation game. "'Power allocation' [means] the need of the countries to be constantly and simultaneously engaged with direct missions related to multiple fronts in order to support any friend [or] oppose any foe to assure survival and success."

A country in the [game](#) must maintain equilibrium—it cannot extend friendship if it does not retain the resources to mediate conflicts between allies. More allies thus increases the country's responsibility to help mediate conflicts that may arise, which could overstretch and decrease the country's own overall welfare.

Li said that the findings allow for reasonable speculation on current events, including whether and how China should participate in the potential conflict between the United States and North Korea.

"Both North Korea and the United States are allies that China would like to maintain at least at some level," Li said. "However, given its current power status (especially with the number of American troops stationed in South Korea and other non-military consequences, such as trade), can China afford [to stand] in the middle of the road in this crisis?"

Next, Li and Morse expect to extend this line of research to predict the probable distribution of all possible [power](#) allocation outcomes for countries in hypothetical and in real conditions. Following this line of research, the scientists may be able to predict how China may benefit—or not—from taking one side or the other.

They also plan to study how changing policies can affect a country's equilibrium in short and long-term strategies.

"Ultimately, this research program seeks to combine methods from system sciences and research questions in political sciences," Li said, calling this an expansion of the cybernetic approach—the science of communications and automatic control systems in both machines and living things. "Hopefully, the results will eventually be of assistance to the defense and diplomacy community."

More information: Yuke Li et al, The power allocation game on a network: a paradox, *IEEE/CAA Journal of Automatica Sinica* (2018). DOI: [10.1109/JAS.2018.7511129](https://doi.org/10.1109/JAS.2018.7511129)

Provided by Chinese Association of Automation

Citation: Having more allies may decrease a country's power (2018, June 26) retrieved 24 March 2023 from <https://phys.org/news/2018-06-allies-decrease-country-power.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.