

**Frontiers of Game Theory: Theory and Applications**

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**【Outline of survey】**

The globalization of the modern society makes the interdependence of economic agents, at all levels of individuals, organizations, regions, and nations, ever more complicated. While there are more opportunities for cooperation, there are (probably even more) instances where the conflict of interest is so predominant to limit the efficacy of the market mechanism. Examples include the progression of global warming and the fragility of international financial markets. More generally, these problems tend to arise from such factors as uncertainty, externality, incomplete markets, imperfect information, and strategic interactions. Game theory is a fundamental tool to analyze these factors.

In this research, we ask how to attain efficient and fair social states through designing markets and institutions. For this purpose, we partition the research topics at the frontier of game theory into three groups, (1) dynamics and incomplete information of the market mechanism, (2) information and incentive in organizations, and (3) political economy; and assess the impact of interdependence across markets and institutions from a broad perspective involving cognition, emotion, rationality, information, evolution, and convention.

**【Expected results】**

The success of the project promotes the research of game theory in Japan, and enhances our academic status as a research center of game theory in the international community. The project makes it possible for us to construct an international research network. In the field of economics, our research of game theory complements the traditional approach of the general equilibrium theory, and improves the applicability of economic analysis to the factors, such as uncertainty, incomplete markets, externality, organizations and political economy, which may cause market failure.

**【References by the principal investigator】**

- Akira Okada, *Game Theory*, Yuhikaku Publishing Co., Ltd., 1996.
- Akira Okada, "A Noncooperative Coalitional Bargaining Game with Random Proposers," *Games and Economic Behavior* 16 (1), 1996, 97-108.

**【Term of project】** FY2008—2012

**【Budget allocation】**

**139,600,000 yen** (direct cost)

**【Homepage address】**

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