

摘要

都市生活環境的好壞部份取決於公共建設的供給與規劃設計品質好壞。其中，以鄰避設施經常為民眾所抗爭，尤其在臺灣因屬土地私有制度，因此，在鄰避設施區位選取上變得更加困難與浪費時間，當然伴隨而來的是財政的問題。而多數抗爭的發生都與環境議題相關，其結果是同樣導致國家財政的困難。因此，政府與民眾的互動變得關鑑與急迫。O'Hare (1977, 引自翁久惠 1994) 認為鄰避性設施設置其可看成囚犯困境賽局，Camerer (2003) 亦指出環境污染等公共議題也是屬於囚犯困境賽局模式。本研究採用有別於Axelrod (1984) 以囚犯困境模式為基礎進行電腦模擬以比較互動策略差異之方法，而是以推論分析之方法，進行囚犯困境賽局模式下之互動策略差異比較。而且，在本研究中更以實驗方式進行實證，而實證結果也再次證明在資訊對稱假設前提下，以牙還牙 (tit-for-tat) 策略的確是相對較佳的策略。而且，可以作為政府設置鄰避設施決策之參考。基於雙人囚犯困境本研究在三種情境下針對以牙還牙策略、背叛策略、忠誠策略及隨機策略四種策略進行比較，結果仍以以牙還牙策略為較佳策略其次是隨機策略、忠誠策略及背叛策略。若從複雜科學的角度來觀察，是否可將以牙還牙策略視為複雜，忠誠策略的始終如一與被背叛就永不合作的報復策略，則可視為一種固定不變的秩序，當然混合策略是隨機的選擇視為是混沌，而可大膽推論複雜比較佳。

關鍵詞：計畫、政策、囚犯困境、賽局、策略

A Theoretical and Empirical Comparison of Interactive Strategies for Prisoner's Dilemma Games

— A Case Study of the Nei-Hu Waste Landfill Site

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Abstract

The quality of urban living environment is strongly related to the provision and planning / design of public facilities, of which the NIMBY, Not-In-My-Back-Yard, facilities are often resisted by residents. Therefore selecting the location for the NIMBY facilities has become more and more difficult and time consuming. In Taiwan in particular, adapting the tenure landholding system, along with financial difficulties, frequent mass protests take place in relation to environmental issues, and consequently lead to financial development issues of the country. Hence the interaction between the government and the public becomes critical and urgent. O'Hare (1977, cited from Weng, 1994) believes that the NIMBY facilities can be seen as a prisoner's dilemma game in game theory, whereas Camerer (2003) also points out how public issues such as environmental concerns are also a type of prisoner's dilemma game. This research adopts an alternative methodology to that of Axelrod (1984) in comparing interactive strategies in prisoner's dilemma games, in which a computer simulation was used. Based on a deductive analysis comparing different interactive strategies in prisoner's dilemma games, in this research an experiment was conducted to verify empirically the results in the context of siting the NIMBY facilities. The experiment had once again proven that tit-for-tat is indeed a comparatively more effective strategy, with the assumption of symmetric information, which can be used as a reference when political decisions are to be made from the government regarding the NIMBY facilities. Based on the two-person, iterated prisoner's dilemma game, we compare four strategies under consideration are tit for tat (TFT), always defect (AD), always cooperate (AC), and random actions

(RA). The results show that TFT is the best strategy followed by RA, AC, and AD. The implications are that policies that take into account contingencies yield higher expected payoffs than those do not, and that emergent policies as reminiscent of complexity are more effective than either fixed or no policies derived from order or chaos respectively.

Keywords: plans, policies, prisoner's dilemma, game, strategy