Available online at www.sciencedirect.com

SCIENCE DIRECT®

ELSEVIER

International Journal of Forecasting 21 (2005) 463–472

international journal of forecasting

www.elsevier.com/locate/ijforecast

# Game theory, simulated interaction, and unaided judgement for forecasting decisions in conflicts: Further evidence

Kesten C. Green*

*Business and Economic Forecasting Unit, PO Box 11E, Monash University, VIC 3800, Australia*

**Abstract**

When people in conflicts can accurately forecast how others will respond, they should be able to make better decisions. Contrary to expectations, earlier research found game theorists' forecasts were less accurate than forecasts from student role players. To assess whether game theorists had been disadvantaged by the selection of conflicts, I obtained forecasts for three new conflicts of types preferred by game theory experts. As before, role-players in simulated interactions were students, and other students forecast using their judgement. Game theorists did better than previously. However, when the three new and five earlier conflicts are combined, 101 forecasts by 23 game theorists were no more accurate (31%) than 354 forecasts by students who used unaided judgement (31%). Experienced game theorists were not more accurate. Neither were those who spent more time on the task. Of 105 simulated-interaction forecasts, 62% were accurate: an average error reduction of 47% over game-theorist forecasts and a halving of error relative to the current method. Forecasts can sometimes have value without being strictly accurate. Assessing the usefulness of forecasts led to the same conclusions about the relative merits of the methods. Finally, by combining simulated interaction forecasts, accurate forecasts were obtained for seven of the eight situations.


*Keywords:* Accuracy; Methods; Role playing; Strategy; Usefulness

Conflicts are an important concern. Just how important, is illustrated by the pervasiveness of conflict stories in the news. For example, among the top 21 articles headlined on the homepage of *The New York Times* on August 4, 2003[1], more than half were concerned principally with conflicts in which two or more parties were interacting. They included stories

* Tel.: +61 3 990 52358; fax: +61 3 990 55474.
*E-mail address:* kesten@kestencgreen.com.
*URLs:* kestencgreen.com, conflictforecasting.com.

[1] www.nytimes.com at 12:03 AM Eastern Time. The articles considered were headlined in the central (two-column) panel of the page and included all unique articles from the top of the page and under the headings: National, Business, International, Editorials/Op-Ed, Washington, and New York Region.

0169-2070/$ - see front matter © 2005 International Institute of Forecasters. Published by Elsevier B.V. All rights reserved.
doi:10.1016/j.ijforecast.2005.02.006

with headlines such as "Food and peace just a memory in Liberian city", "Taliban are killing clerics who dispute holy war call", "Verizon contract talks extend into the night", and "Hollywood producer makes 2nd bid for German TV group".

It seems likely that improved forecast accuracy in conflict situations would lead to better decisions. For example, consider the management of *Verizon* (above) who were involved in negotiations with unions. If they could have predicted which offers would lead to agreements and which would not, and if the unions could have predicted which demands would be accepted, a speedier resolution and a better outcome would have been possible.

Green (2002) presented findings on the accuracy of forecasts from three methods for predicting decisions in conflicts. For each conflict, participants were asked to choose the most likely decision from a list. Five of the six conflicts used in the research involved direct or indirect interaction between parties. All were real situations. For those five conflicts, game theory experts' forecasts were little more accurate (28% of the predictions were accurate) than the unaided-judgement forecasts of university students (27% accurate). In contrast, forecasts from university students in simulated interactions (a type of role playing in which participants act out the interactions of parties in a conflict situation) were substantially more accurate (61%).

Erev, Roth, Slonim, and Barron (2002), and Goodwin (2002), in commenting on Green (2002), suggested the possibility that some types of conflict may be more amenable than others to forecasting by game theorists. I reasoned that if anyone knew what these conflict types were, it would be game theory experts who had done research on forecasting for real conflicts. In my search for prior evidence on forecasting accuracy in Green (2002) I found five such studies and from these I deduce the conflict types the researchers regarded as amenable to forecasting.

It is worth noting that not all game theory experts make a distinction between types of conflict suitable for forecasting with game theory, and types of conflict that are not. For example, Fraser and Hipel (1984) maintained that their game-theoretic method (conflict analysis) can usefully forecast any type of conflict.

In this article, I present new findings on the accuracy of forecasts from game theorists, unaided judgement, and simulated interaction for three conflicts that are dissimilar to the five in Green (2002). Details on the three forecasting methods are as described in that article. I have made some adjustments to the coding of responses reported in the earlier work, and these are described in Appendix A.

I first present evidence on the expectations people have regarding the performance of the three forecasting methods. Second, I describe the three new conflicts. Third, I assess whether the three new conflicts, as well as the five used in the earlier research, are of types preferred by game theorists. Finally, I present my findings.

## 1. Expectations of accuracy

Opinion is divided on whether it is appropriate to use game theory to make predictions about specific conflicts. For example, Robert Wilson of Stanford University was quoted as saying "Game theory does not offer any specific answers to any specific situation. It says something like 'these are the things to take into account'" (London, 2002). Other game theorists do recommend game theory for forecasting (Green, 2002). More recently, Camerer (2003) listed "predicting what is likely to happen" as one of the two important uses of game theory (p. 157), and Dixit and Skeath (2004) wrote "When looking ahead to situations where multiple decision makers will interact strategically, we can use game theory to foresee what actions they will take and what outcomes will result" (p. 37). Finally, the terms "game theory" and "forecasting" produced 60,900 hits using a Google search and 1630 hits using a Google Scholar search on December 21, 2004.

Given the controversy, Scott Armstrong and I thought it worthwhile to assess beliefs about forecasting among people with an interest in conflicts. To this end, prior to talking to various groups about forecasting for conflict situations, we obtained opinions from those who attended. Respondents were academics and students at Lancaster University (19 usable responses), Manchester Business School (18), and Melbourne Business School (6), as well as Harvard Business School alumni (8), Royal New Zealand Police College educators (4), conflict management practitioners in New Zealand (7), and