

Abstract

Arms-control inspection is modeled by two games, one played simultaneously and one sequentially, between an inspector (O) and an inspectee (E). In each game,

- E may choose to comply with or violate an arms-control agreement;
- O may choose to inspect, or not, for a possible violation by E.

Besides various costs and benefits, the parameters of the games include the conditional probability that a violation will be detected if there is an inspection, reflecting the uncertainty of inspection.

In the simultaneous game, O and E make simultaneous choices. Because none of the three possible equilibria involves certain compliance by E, O is not always able to deter E from violating an agreement. In the sequential game, by contrast, O, by announcing in advance an inspection strategy and credibly committing itself to carrying it out, can, with certainty, deter E from violating, which in general leads to an equilibrium in the sequential form Pareto-superior to that in the simultaneous form. Thus, there are evident benefits for both O and E when O "moves" first, given that its detection probability is above a certain threshold. Policy implications of this finding, especially in regional conflicts today, are briefly discussed.