Combinatorial Voting*

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Abstract

We study elections that simultaneously decide multiple issues, where voters have independent private values over bundles of issues. The innovation is considering nonseparable preferences, where issues may be complements or substitutes. Voters face a political exposure problem: the optimal vote for a particular issue will depend on the resolution of the other issues. Moreover, the probability that another issue will pass should be conditioned on being pivotal. We prove equilibrium exists when distributions over values have full support or when issues are complements. We study limits of symmetric equilibria for large elections. Suppose that, conditioning on being pivotal for an issue, the outcomes of the residual issues are asymptotically certain. Then limit equilibria are determined by ordinal comparisons of bundles. We characterize when conditional certainty occurs. Using these characterizations, we construct an nonempty open set of distributions where all limit equilibria maintain uncertainty regarding the outcome of the election. Thus, predictability of large elections is not a generic feature of independent private values. We examine the ordinal efficiency of limit equilibria. While the outcome can be unpredictable even without the existence of a Condorcet cycle, we provide sufficient conditions on the type distribution which guarantee predictability.

1 Introduction

Propositions 1A and 1B of the 2006 California General Election both aimed to increase funding for transportation improvements.[1] Suppose a voter prefers some increased funding and supports either proposition by itself, but given the state's fiscal situation, also prefers that both measures fail together than to have both pass together. She views the propositions as substitutes. However, the ballot does not ask for her preferences over bundles of transportation measures, but only elicits

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[1] Proposition 1A dedicated gasoline taxes for transportation improvements, at the exclusion of other uses, while Proposition 1B issued $20 billion in bonds to fund improvements. Both measures passed by large margins.