Global Asymptotic Properties of Large Weighted Voting Games

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This paper investigates the asymptotic behaviour of some global quantities relating to weighted voting game models when the number of small voters tends to infinity. First, voting is assumed to be motivated by interests, so that the collective decision is 'preference aggregating'. Here the quantity whose asymptotic behaviour is analysed is 'complaisance' of the decision-making body which was introduced by Coleman in 1971 as the 'power of a collectivity to act'. Second, decision-making is assumed to be 'truth-tracking', so that there is a right answer but voters only have a partial information and imperfect competence for detecting the truth. The quantity considered here is the collective competence of the decision-making body: the probability of it's arriving at the correct decision. The paper provides a generalization of the celebrated Condorcet Jury Theorem which deals with the simple 'one person one vote' situation.

Keywords: Limit theorems; Majority Games; Weighted voting games; Condorcet's Jury Theorem