

Consistent Representation and Electoral Systems

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Abstract

This paper studies electoral systems in representative democracy by axiomatic approach. An electoral system is a function that maps each preference profile to distribution of seats in the *congress*. We show a paradox of single-member district systems: a political party that is the strong minority in the nation becomes the dominant party in the congress and a party that is the strong majority in the nation becomes the weakest party in the congress if we use some desirable voting rules in single-member electoral systems under weak conditions. This paradox motivates us to focus on not only voting rules but also electoral systems such as single-member district systems, multi-member district systems, and proportional representation systems. We define a consistency property for electoral systems, called *representative consistency*, and search for electoral systems complying with the property. This property requires that the majority in the nation should not be the minority in the congress. We first show incompatibility of representative consistency and *desirable* voting rules in single-member electoral systems. We next show that a simple proportional representation system with some desirable properties does not satisfy representative consistency. We finally show a possibility theorem. We show the existence of a class of electoral systems satisfying representative consistency and other standard properties.

Keywords: Electoral system, Condorcet criterion, Single-member district system, Proportional representation

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