

Duverger's Law in the Laboratory

This Version: January 9, 2010

Yoichi Hizen, Hokkaido University
Keigo Inukai, Hokkaido University
Kengo Kurosaka, Hokkaido University

Abstract

In this paper, we conduct a laboratory experiment to test the robustness of Duverger's law and its extension "M+1 rule." The M+1 rule states that, in an M-member electoral district with the single nontransferable vote, M+1 candidates gather a large share of votes, and Duverger's law is the case of M=1. Our experimental results support the comparative statics of the M+1 rule so that votes are concentrated on a smaller number of candidates under M=1 than under M=2. Whether the M+1 rule is regarded to hold by itself or not depends on what type of index we use to measure the effective number of candidates. Some degree of variety is also observed between experimental sessions. Nonetheless, on average, our data analysis with Molinar's index supports the M+1 rule well.

The empirical literature tries to find whether Duverger's law holds in the actual politics, and hence it uses data from actual elections. Our purpose is somewhat different, and it is to know the robustness of Duverger's law and the M+1 rule. The robustness is examined in terms of the following three aspects. First, we would like to know the external validity of the laws so that we examine them in the laboratory. Secondly, we would like to know whether the laws hold beyond the political context so that we may apply the laws to other academic fields: the laws may be generalized that M number of something (e.g., positions, rights, customers, etc.) tend to be competed for among M+1 competitors. Hence, we conduct our experiment in a neutral context without using terms related to politics (e.g., election, vote, candidate, etc.). Finally, we would like to know whether the laws hold even without the strategic behaviors of politicians. In our experiment, therefore, candidates are exogeneously given only as alternatives for voters to choose, and subjects play the roles of voters only.

Our experiment was held at the Center for Experimental Research in Social Sciences, Hokkaido University, Japan. We recruited 160 undergraduate students from various academic disciplines. In each of 8 sessions, 20 subjects were seated randomly in front of PCs, and they had 40 elections under M=1 and M=2 respectively. In each election, subjects were asked to choose one of alphabets A, B, C, D (4 candidates) and X (abstention). The earnings for each subject were determined by which alphabet won and whether he/she voted or abstained.

Several previous studies also examined Duverger's law in laboratories, but their main purposes were not the test of Duverger's law for itself. Hence, their experimental design was relatively easy for the law to hold in terms of the number of voters, the voter preferences regarding candidates, and the information provided to voters in advance of elections. Our experiment is designed to eliminate something helpful for the law to hold as severely as possible. In this sense, our experiment can be regarded as the severest test of Duverger's law and the M+1 rule.