MODELS OF COLLECTIVE DECISION MAKING

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In recent years mathematics is breaking into social sciences, including political sciences. Collective decision making models are suitable example of that. They are effective tools for modeling of decision making processes at the level of the state or local government bodies. One of their main aims is to predict the outcomes of these collective decisions, though they are similarly important also for improvement of sociological theory of decision making processes. These mathematical models use the analyses of policy domain and social network data, i.e. measure of mutual influence within political actors, available resources of actors, their political positions etc.

In view of mathematics we can distinguish two different approaches: computer based simulation models of policy network evolution and discrete time iterations of mutual influence matrix in given policy network. These quite deterministic models are usually improved by stochastic elements and analysed using a statistical methods.

Two versions of collective decision making models (basic and bolstering efect implemented) was developed in this paper. Both are based on discrete time iterations of leverage matrix F, which describes a mutual influence within actors in given policy network. Both versions use property of row stochastic matrices and a positive solution of convergence problem of the model will be shown. The outcome of the test of empirical data will be presented.