Stable sets and standards of behaviour

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Abstract. In this paper we present a constructive, behavioural and axiomatic approach to the notion of a stable set as a model of the standard of behaviour of a social organisation. The socially stable set we introduce is a generalisation of the von Neumann-Morgenstern stable set. In contrast with the original version, our stability concept is always solvable. The standard of behaviour, reflecting the established conceptual order of a society or organisation, emerges from a dominance relation on alternative conceptions that are relevant with regard to a certain issue. This common social choice phenomenon, that permeates our societies and organisations, we have tried to clarify. Two axiomatic characterisations as well as a construction algorithm for socially stable sets are presented. These characterisations are based on behavioural postulates regarding the individual or collective strategic behaviour of effective sets. Relations between socially stable sets and other notions of stability are discussed.

1 Introduction

In Sect. 4.5.3 of the Theory of Games and Economic Behaviour, von Neumann and Morgenstern define the vN-M stable set. This abstract notion formalises their idea of a standard of behaviour of a social economy. While the authors describe this economy as a game of n participants with payoffs in the form of imputations, incidentally, they also refer to a more general setting for their stable sets. In Sects. 4.4.3 and 4.6.1, this more general setting appears to

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be a theory of social phenomena based on effective preferences between various states of society or an organisation.

We follow this direction and primarily view the standard of behaviour as an established conceptual order of an organisation or society. Such a standard of behaviour often functions as the frame of reference for the collective decision making. In a public or private organisation, the mission statement and policy alternatives to realise it are subject to scrutiny from the perspective of the standard of behaviour. In a society, the standard of behaviour reflects the degree of civilisation. It is used to select policies and constitutes the normative base for the political correctness of opinions and public statements and the like.

The structure from which the standard of behaviour emerges are alternatives and dominations between certain pairs of these alternatives. The alternatives we think of are strategic options, economic doctrines, various possible organisational designs or other lasting intellectual conceptions with regard to a certain issue. A domination between a pair of alternatives is assumed to be generated by at least one effective coalition. Such a coalition consists of members of the organisation who are together capable of enforcing their preference of the one alternative over the other, if only these two were considered.

An effective coalition will be inclined to apply its binary dominance, but, in the larger context of the dominance relation, it may have strategic reasons for not exercising its power. Hence, the existence of a domination between two alternatives does not imply that it is enforced. In our approach, this phenomenon of non-enforcement occurs in two instances. A dominance will be not enforced by any of its effective coalitions if the preferred alternative is already suppressed by at least one other effective coalition which does enforce its preference. Such a suppressed alternative we call subduded. Situationaly, it can not serve as a viable alternative because it could at once be overturned or it might even be generally considered as discredited. The other reason for non-enforcement is equalisation of dominations along circular patterns within the standard of behaviour. Here the effective coalitions involved may be motivated by mutual interest. This conditional behaviour of effective sets we call the non-enforcement principle. We consider it to be part of the organisational or societal culture.

Let the set of alternatives be denoted by $X$ and let $A$ be the set of agents or members of the organisation or society. $R$ is the dominance relation on $X$ that is generated by the effective coalitions: If there is at least one effective coalition generating a domination of $x$ over $y$, then $(x, y) \in R$. The collection of effective coalitions corresponding to an elementary domination $(x, y) \in R$ is $E_{x, y} \subseteq 2^{X} \setminus \emptyset$ while $e_{x, y} \in E_{x, y}$ denotes a specific effective coalition for $(x, y) \in R$. A pair of alternatives $(x, y)$ between which no effective coalitions exist is mutually independent. In case of opposing effective coalitions, $(x, y) \in R$ and $(y, x) \in R$, the two alternatives are discordant. If $(x, y) \in R$ and $(y, x) \notin R$, then $(x, y)$ is asymmetric. If $R$ contains no discordant pairs of alternatives, then $R$ is asymmetric. We will also refer to the elements of $X$ as nodes and to $(x, y) \in R$ as an arc from $x$ to $y$. 