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Two-Option Strategies of Team Players In Sponsored Games

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Abstract:

In a sponsored game there are two sets of players – the *sponsors* (S) and the *team players* (T). Each sponsor $s_i \in S$ has a set S_v^i of reward system while each member $t_j \in T$ chooses to join a coalition $M \subseteq T$. A sponsor expects to gain a net payoff by offering to pay the team members to form the best coalition that will yield him the best gain. This allows him to choose a move $v_i \in S_v^i$ so that a coalition M of his choice will receive from him the amount $v_i(M) \geq 0$. In fact, one may view v_i as a characteristic function $v_i : 2^T \to \Re_{\geq 0}$ with $v_i(\varnothing) = 0$. Hence, every team player has the power set of T as its set of permissible actions. Given that S and T have m and n elements, respectively, once a collection of rewards (or move) $V \in \prod_{i=1}^{m} S_v^i$ is formed, the team players of a coalition M receives the total payoff $V(M) = \sum_{i=1}^{m} v_i(M)$ which is the total amount offered by all the sponsors. This means that each team player must come up with an "action" $\alpha_j : \prod_{i=1}^{m} S_v^i \to 2^T$ so that for a move V of all the sponsors, player t_j chooses to join coalition $\alpha_j(V) \subseteq T$. Consequently, a move V induces a "winning" set $\alpha(V)$ of coalitions yielding the maximum payoff for its members. Now, if $M^* \in \alpha(V)$ an allocation scheme $\alpha_V(M^*)$ for the team players becomes one concern.

This paper will discuss a special case of this sponsored game wherein the team players are limited to choose between two stategies – M and its complement. It is the same as viewing the offers of the sponsors as a way of voting to join coalition M or not. We study the properties that describe the pure strategy equilibrium resulting from this situation.

Key Words: sponsored games; sponsors; team players; strategies, equilibrium