The essence of the situation to be studied in this paper is the following: four players are involved in a competition that is resolved by playoff elimination. The heterogenous agents characterized by their “capacities” play sequential “concession” game to win the prize. Thus, the strategic variable of the players is the level of “effort” they are willing to spend in each round. It is assumed that the sum of effort spent in the two rounds cannot exceed the “capacity” of the player. The player investing higher effort in a partial conflict wins the particular conflict, the first round winners can participate in the final and the overall winner get the prize.

The brief description of the game suggests that the analyzed situation is a variant of the (sequential) game of attrition introduced by Maynard Smith in 1982 to study the evolutionary stability of behavioral patterns in animal conflicts. However, our approach differs from classical war of attrition in two respects. First, we generalize the payoff function of the winner of particular conflict as a function of effort of both winner and loser, while the payoff of the follower in the war of attrition depends just on the time, in that the leader give up the game. We suppose that the effort that the player plan to spend in partial conflict is not only of the matter of “time (and money) that she is willing to spend during the game,” but also “time (and money) that she sacrifices for the training and preparation for the game.” While in the first case can the winner (i.e., follower) stop her expenditures directly at the moment in that her opponent concedes, the later expenses are payed “a priori” and there are lost.

The other generalizations of the war of attrition employed in our paper follows from our primary intention to consider the game in the framework of the political competition. We motivate our approach in the sense that the qualification round of the game stays for the intra-party competition and the final represents the general elections. Therefore, we try to model strategic interactions and phenomenons that are observable in the political context.

First, we examine the above described modification of the standard war of attrition. Having this benchmark in hands we allow for side-payment and repeating. The first case we model as a “bribing” the first-round opponent to save the own capacity for the final round. In this scenario the players ex-ante commit themselves to ex-post re-distribution of the prize to strategically change the incentives of the opponents to fight. Then, in the repeated game framework, we describe various “political contracts” regarding the restriction to the number of period in that can the (overall) winner subsequently participate.
in the political competition. Here, we are mainly interested in the impact of the constitutional rules on intensity of intra party competition.

Technically, we assume that the capacities of players are public knowledge. The mixed strategy Nash equilibria of particular games are described, discussed and compared.