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Quantifying Skill in Games - Theory and Empirical Evidence for Poker, erscheint in: Gaming Law Review and Economics, Februar 2009

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Abstract

In most countries, the regulation of gaming is based on whether the predominance for the outcome of the game lies in skill or chance. As poker has become extremely popular in recent years, a heated discussion has evolved about the amount of skill involved in Poker. Recent contributions to this question fail to convince, mostly because they do not imitate reality sufficiently. In one of the major works in this field Cabot & Hannum simulated poker games for various player profiles and interpreted the differences in the results as skill. But they only distinguish between skilled and unskilled players without defining these profiles or covering nuances in skill differences. In probably their most influential paper Dreef et al. made the important point that skill in poker is always relative - relative to the skill of other players and to the magnitude of the chance elements.
Using these two works as a base point for this paper we derive the critical repetition frequency (CRF) of games. The CRF is defined as the threshold between a game that is predominantly influenced by chance or skill and is valid for all games. In the second part, we compute the CRF for poker with data from an empirical survey of 51,761 poker players and conclude that poker is a game of skill - but only for this sample. However, we also use the CRF to point out the shortcomings of the predominance test and question the current gaming-regulation based on the classification of a skill or a chance game.