
On the beauty-contest experiments: Is intelligence relevant?

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Abstract

The Keynes' famous beauty contest has been carried out in economics laboratory as a way to demonstrate the inapplicability of the homogeneous rational expectations hypothesis and to manifest the relevance of bounded rationality. The resultant beauty contest experiments have motivated some recent progresses in cognitive economics, such as Crawford's level-k reasoning, Camerer's cognitive hierarchies to economics. In this experiment, subjects' intelligence may be characterized by their depth of reasoning, for example, the parameter "k" in the level-k reasoning, and presumably the advantage goes to the one with the highest "k". Nonetheless, a puzzle immediately arises when the beauty contest is formed as an infinite-regress problem, which is in general not solvable. Hence, in light of this infinite-regress undecidability, whether more intelligent subjects can take advantage of less intelligent ones in this contest become an empirical issue, which can only be solved by conducting experiments. This defines the purpose of this paper. This paper will present beauty contest experiments with subjects of different intelligence. By understanding the difficulties arising from measuring intelligence, this paper considers the measures based on the Raven's Progressive Matrices, working memory capacity, Fredrick's cognitive reflection and Machiavellian intelligence. We find that subjects reasoning in line with dominance are higher on cognitive ability, as measured by working memory task, Raven's SPM+ and Fredrick's cognitive reflection test. We also demonstrate that cognitive ability leads to better performance measured by guessing differences. Profit, another measure of performance, depends on whom you compete in the games.

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