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Comparison of abilities and results using market opinion and simulation -
the case of the UEFA European Championship 2016

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Abstract
Operational research (OR) has a long history of application in the area of sport. For more than fifty years
OR methods have been used to optimize teams’ structure and tournament schedules, to predict results
and solve other problems. Modeling and decision making in football has caught attention of the
operational research audience. Ranking of teams and whether the best team won are frequently raised
topics.

We raise a question which team was the best in UEFA European Championship 2016, or in short EURO
2016. Match results are influenced not only by teams’ skills, but also by a whole range of more or less
random factors. Betting market is supposed to be informed about the teams’ abilities. Bookmakers’
valuations are presented in a form of fixed odds, which are available before the game.

We use fixed odds from bookmakers to estimate abilities of the teams. Abilities are presented in a form
of expected average number of goals in a game for a team. Estimated abilities are used to model match
result and corresponding match outcome (win, draw or lose). Match results are modeled by modified
Poisson distributions.

Monte Carlo simulation is used to replay EURO 2016, modeling match outcomes as independent
Poisson variates based on estimated capabilities of teams. Teams’ winning probabilities are estimated
by this simulation. Simulation results are compared to actual results.

Keywords: Betting market, Football, Monte Carlo simulation, Sports analytics