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**Golden goals make for more exciting soccer matches**

ARE you bored by football matches in which neither team wants to go on the offensive and it all ends in a draw? Help could soon come from a strange source: economists.

Isabelle Brocas and Juan Carrillo, now at Columbia Business School in New York City, applied "game theory" to league football's scoring system to see how they could make matches more exciting. Game theory predicts the outcome of situations where there is a conflict of interests. Brocas and Carrillo developed a model that describes whether a team will go on the attack or stay in defence, depending on how the result is decided. Their work concludes that two changes in the league's rules in combination have the biggest effect on encouraging attacking play.

One change is to introduce an extra 20-minute period at the end of the game if there is a draw at full-time. The first team to score a "golden goal" during that extra time will clinch the game. If no one scores, the game still ends in a draw. A similar golden goal system was used in France in 1998 during the last World Cup. And North American ice hockey has a "sudden death" period to decide draws. But no one has proposed it be used in league football before.

The second change is to give more points for a win. A team will put a lot of players up front when on the attack—inevitably weakening its defence—so it is only likely to risk trying for a goal if the prize is big enough. In 1981, England's Football League upped the number of points awarded to the winner from two to three for just this reason. A team still got one point for a tie, and nothing for a loss. The change made a win even sweeter than before.

Surprisingly, the model also predicts that this change will make teams more likely to go on the attack during the second half of the game. That's because a lead becomes more valuable during this half as the opponent has less time to equalise the score. So, if there's still a tie at half time, teams will risk more to gain the lead. Sure enough, in the real world more goals are scored in the second half.

Carrillo says that awarding three points for a win, and adding a "golden goal" tie-breaker in extra time, is mathematically the best way to promote a fast, risky and exciting game. "It becomes tempting to rush for a goal when you know that just by scoring you get two more points," he says. Their work was published last month by Britain's Centre for Economic Policy Research.

The Football League is considering changing the structure of games, says spokesman Dennis Signy. "We are discussing all sorts of proposals. If this is put forward we will consider it."

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