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In a technical note published in *JORS* we suggested that the Duckworth and Lewis method (D/L) could be used to determine an alternative margin of victory when the team batting second (Team 2) wins a one-day cricket match. Our aim was to have a margin of victory in runs that reflected the degree of dominance of one team over the other, and was fair to both teams. As is the case if the team batting first (Team 1) wins, a larger margin in runs should represent a more comprehensive win. In addition, a win by a given number of runs should reflect the same degree of superiority, whether achieved by Team 1 or 2. To achieve this, our suggested method uses the D/L rules to project the incomplete second innings to an estimated score for the full 50 overs. On the other hand, Duckworth and Lewis reduce the target score to a par score, and recommend using the excess over the par score as the margin of victory.

In what must be the most one-sided victory in International One day cricket, on 8 December 2001, Sri Lanka took only 4.2 overs to score 39 for 1 wicket in response to Zimbabwe's all out for 38. While our suggested method gives a margin of victory of 201, the par method gives a margin of victory of only 34. This is less than many other Team 2 victories, and a lot less than many Team 1 wins. Clearly the D/L excess over par method does not produce margins that reflect the strength of victory. Not only does it incorrectly order Team 2 victories, it consistently undervalues victories by Team 2 relative to those by Team 1.

Duckworth and Lewis rightly point out some difficulties with discontinuity that we had not considered. In one match, West Indies replied to Scotland's 68 with 70 for 2 in 10.1 overs. Our projected score for the West Indies of 244 gives a margin of victory of 176, which we believe is more indicative of the superiority of the West Indies than the 55 runs they are ahead of D/L par score of 15 (note also the D/L method implies this is a greater victory than the match discussed in the previous paragraph). However, had the match finished due to rain one ball earlier, under the rain interruption rules the margin of victory would have been 53 runs, causing a huge jump in the victory margin. Clearly, 'discontinuities' such as this will arise when one rule is used for one ball, and another rule for the next. However, the arguments we propose in favour of our method apply equally to wins determined following a rain interruption. In this case, if the match was interrupted by rain after 10 overs, a margin of 53 runs does not indicate the crushing victory achieved by the West Indies. Under our method, the West Indies total would be projected in exactly the same manner. At 68 for 2 after 10 overs they have used up 22.4% of their resources, so their run supplement is 77.6% of 225 = 175 for the margin of victory, and the 'discontinuity' disappears.

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The second example raised is of more concern, as it shows applying our suggestion in cases of rain interruption can give negative winning margins. Duckworth and Lewis give the example of a team chasing 300 runs. Termination by rain after 40 overs when 220 for 5 wickets gives a projected score of 281, and a 'winning' margin of 19 runs for the bowling team, whereas the D/L rules give a par score of 217 and the batting team would win. This is clearly not desirable, and we thank Duckworth and Lewis for bringing it to our attention. We believe it would arise in cases when the team batting second is just on target to achieve a target over 225. The reverse case would arise for teams just behind a target less than 225—although the match would be lost if terminated by rain, our projected winning margin would be positive. This arises because of the different way the D/L approaches first and second innings rain interruptions. A first innings team interrupted after 40 overs when 220 for 5 would be given a projected score of 281, but a second innings team interrupted at the same point would be declared the victor by 3 runs when chasing 300.

This problem again arises by applying two different methods. In projecting the first innings score when resources have been lost due to rain, Duckworth and Lewis do not scale the team's score up in proportion to the ratio of available resources, as it may lead to grossly inflated scores. It cannot be assumed that fast scoring rates achieved over a small number of overs can be sustained. They therefore assume the unused resources would produce runs at the average rate achieved in all international matches, 225 for a 50-over match. However, in the second innings, when reducing the target score to obtain the par score, they reduce the score by the proportion of the actual score. There are good reasons for this in the context of determining targets, but because we have used the first innings rule to project the second innings, we have inconsistencies between our margin of victory and the winner as determined by the D/L rules. As we have no desire to change the D/L rules, we need an alternative solution.