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MEASURING PERFORMANCE OF BATTING PARTNERS IN LIMITED OVERS CRICKET

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ABSTRACT

Batting and bowling are prime skills in the game of cricket. Unlike bowling, batting takes place between a pair of two batsmen, often referred to as a partnership. If a batsman is dismissed, the pair is broken and a new partnership is formed with the next batsman. However, the different existing measures of batting performance are based on individual performances and not on the basis of partnerships. This research attempts to develop a measure to quantify the batting performance of partnerships. This unique measure takes into account not only the runs scored by the partnership, but also the match situation in which the runs are scored by the batting partners. To quantify the model, the 2016 Twenty20 World Cup played in India is considered. If the partnership scores are computed for a series of matches of a given team, then the coach can identify the partnerships that bat well under pressure. It will be helpful in determining the batting order of the team so that reasonably well played partnerships under pressure shall occur more frequently in the upcoming matches. This measure can also determine the best opening batting partners for a given team in limited overs cricket.

Keywords: Batting; Cricket analytics; Limited overs; Performance measurement.

INTRODUCTION

Cricket is a team game played between two teams of 11 players in each side, in a specially prepared area in the centre of a circular field called a pitch. A cricket match is basically a contest between the batsman and the bowler. In a limited overs match the team that bats first tries to score as many runs as it can against the team that fields. The bowler and the fielders, on the other hand, try to dismiss the batsmen and restrict the scoring of runs. At the end of a fixed number of overs the innings ends. The team that fielded now comes in to bat and the team that batted earlier now takes the field. The batting team now tries to score more runs than were scored in the first innings within the limited overs without losing all its batting resources.

The batting takes place in pairs. When an innings starts, two batsmen come on to the pitch to bat. The batsman who faces the deliveries bowled by the bowler stands at the opposite end from where the bowler delivers. He is called the striker. The batsman at the opposite end of the pitch – the end from where the bowler is delivering the ball – is the non-striker. In the event that the striker scores 1, 3 or 5 runs the striker and non-striker change their positions on the pitch. The earlier non-striker now becomes the striker and now faces the deliveries from the

bowler. But if 0, 2, 4 or 6 runs are scored then the striker retains his strike. However, in the case of the last delivery of the over the entire concept is reversed. This rule is made so that the batsmen do not need to change the ends of the pitch except when they score runs. Thus, the two batting partners bat in unison, getting their turn at facing the deliveries (Knight, 2006). A reasonable understanding between the batting partners is key to run-scoring in cricket. The building of partnerships is the foundation of a high team score. The need for successful partnerships is even more essential when a large target that has been set by the opposing team is being chased.

In limited overs cricket, in order to win the match, the team batting second has to score the target runs in a specified number of overs without losing all of its wickets. Thus, the team batting second is generally in a pressure situation to score runs at the required rate and also to preserve its wickets. Thus, long batting partnerships in which runs are scored at the required rate will take a team batting second to victory. But should there be a lack of synergy between batsmen in a partnership and a lower scoring rate than necessary, the task of winning is made difficult for the team batting second in limited overs cricket. For a detailed glossary of cricket terms, one may visit http://www.espncricinfo.com/ci/content/story/239756.html.

This paper improves the Pressure Index developed by Bhattacharjee and Lemmer (2016). This is a ball-by-ball measure that quantifies the pressure experienced by the team batting second. This unique measure is a function of the required run rate and wickets lost at any point of the match. While the chase is on, after every ball of the second innings the value of the Pressure Index also changes. A useful partnership serves to decrease the value of the Pressure Index and make the way to victory for the team batting second easier. Using this concept, this study attempts to quantify the best partnership in the ICC Twenty20 world cup played in India in 2016 while chasing runs. In order for the Pressure Index to have a more general appeal, it will be modelled in a way that can be applied to the first innings of limited overs matches as well. In the absence of any objective target for the team batting first in limited overs cricket matches, this seems to be a difficult proposition. This work, based on the total runs scored in the first innings of previous matches in the same venue, tries to estimate a target that the team batting first might try to score. Accordingly, ball-by-ball Pressure Index values for the team batting first are computed. The Pressure Index values can then be utilised to quantify the performance of batting partners in the first innings of any limited overs match.

To follow is a brief account of the literature in the relevant domain. The next section discusses the Pressure Index and the methodology of quantifying the performance of batting partnerships and describes how the target score for the team batting first is estimated. A discussion of the results of the exercise with data from the ICC Twenty20 world cup, 2016 followed by concluding remarks.

REVIEW OF LITERATURE

Cricket is a data-rich sport. It is natural that several quantitative research projects have focused on cricket. Some areas in which these studies have been undertaken include performance measurement, optimal decision-making, team selection, technological advances in professional cricket, the effect of toss and home advantage, scheduling a tournament, etc. Using a dynamic programming model, Clarke (1988) undertook a study on the optimal batting strategies of a team. Similarly, Norman and Clarke (2004) and Ovens and Bukeit (2006) applied a mathematical modelling approach to optimise the batting order of a cricket team. Since cricket

is a team game, the overall performance of a team is more important than individual performance in all aspects, whether it is batting, bowling or fielding. For example, when batting second, players are at the crease to chase the target that has been set by the opponent team, and then a partnership between batsmen is more important than individual performances. However, batting performances are generally quantified individually but not in partnership.

Very few studies related to the partnership in cricket are available. Probably the pioneering work in this regard is that of Pollard *et al*. (1977). Taking data from English County Championships they made an attempt to quantify batting performance in partnerships using the negative binomial distribution. In order to assess partnership performances in Test cricket, Valero and Swartz (2013) compared the performance of batsmen with their common partners to identify the ones between whom synergy exists. They defined a bivariate statistic, based on the strike rate and batting average of the players shared with the common partner in the crease, collected over an adequately large number of innings. Thereafter, they drew a scatter plot on the basis of the bivariate statistic. The scatter plot is divided into four quadrants to reveal any obvious pattern that would probably indicate a presence of synergy between the players. However, the scatter plot did not reveal any such pattern to indicate the presence of synergy.

Usually in one-day international (ODI) cricket, batsmen attempt to score runs at a high rate relative to balls faced, while simultaneously avoiding dismissal. It is the combination of wickets available and overs remaining in an innings that provides the capacity for scoring runs. To assess opening partnership performances in ODIs, Valero and Swartz (2013) used the Duckworth-Lewis (D-L) (1998) method and the method developed by Beaudoin and Swartz (2003). According to Duckworth and Lewis (1998), the combination of wickets and overs is known as resources, and the resources consumed by the batting team in ODIs during any segment of the match can be determined from the D-L table.

Following Beaudoin and Swartz (2003), the authors used the ratio of total runs scored to total resources consumed as the metric for effective batting in one-day cricket. However, in the D-L method, it appears that actual resource usage during the second innings is more heavily weighted towards the very early and very late overs. To account for this an adjustment is proposed by Stern (2009), whereby separate resource usage tables are employed for each innings. For the first innings, the current D-L method is retained, as it has been constructed based solely on first innings information. However, for the second innings, the resources available with any number of overs remaining and wickets lost is determined by a simple transformation of the associated resources remaining from the current D-L table. Further authors like Tan and Zhang (2001) and Scarf *et al*. (2011) have tried to fit different probability distributions to partnership score data.

PURPOSE OF STUDY

The measurement of performance of batting partners is mostly restricted to opening partners or to Test cricket. No such study on Twenty20 cricket or on batting partnerships irrespective of their position emerged from our search. Also none of the previous studies took into consideration the match situation while evaluating the performance of the batting partners. The current study is placed in this context, and formulates a performance statistic for batting partnerships given the match situation in Twenty20 matches.

METHODOLOGY

Pressure Index

In limited overs cricket, the team batting second has to reach the target before its resources, that is the legal deliveries to be bowled and its batting resources are exhausted. The challenge to the team batting second thus consists of two parts, namely to score the runs at a required rate and not to deplete its resources before reaching the target. Thus, the pressure on the team batting second diminishes if the batting progress is good and also if wickets/resources are kept until the target has been reached. Based on this logic, Bhattacharjee and Lemmer (2016) defined a Pressure Index for the team batting second in Twenty20 matches as,

$$PI = \left(\frac{CRRR}{IRRR}\right) \text{x } \frac{1}{2}\left[\exp\left(RU/100\right) + \exp(\Sigma w_i/11)\right] \quad (1)$$

IRRR is the initial required run rate. If T is the target runs to be scored by the team batting second in *B* balls, then

$$IRRR = \frac{6 \times T}{B} \quad (2)$$

The current required run rate (CRRR) at any point of the innings, when R' runs are already scored in B' balls, we define as:

$$CRRR = \frac{6 \times \left(T - R'\right)}{B - B'} \quad (3)$$

Thus, the ratio *CRRR/IRRR* measures the progress the team batting second has made, at any point, in relation to the rate at which the runs are to be scored.

As wickets fall while chasing, the team's wicket strength deteriorates. Instead of just counting the number of wickets down, Bhattacharjee and Lemmer (2016) decided to take into account the ability of the batsmen whose wickets had been taken. When top order batsmen lose their wickets, the strength of the team is weakened more than when lower order batsmen lose their wickets. In order to take this into account, the wicket weights of Lemmer (2005) are used. Thus, $\sum w_i$ denotes the sum of the weights of the wickets that had fallen at any stage of the innings. However, the wicket weights in Lemmer (2005) are specific to one-day international matches and not appropriate for Twenty20 matches. Also, in Twenty20 matches, only 20 overs are bowled, so losing all the wickets in 20 overs is not very common.

Keeping this in mind, the wicket weights are computed differently here than in Lemmer (2005). The ICC ratings of all international cricketers are available at http://www.icc-cricket.com/player-ankings/profile/ at the end of each match. Using this link, the Twenty20 batting ratings of all the players from all the teams that participated in the super 10 round of the Twenty20 world cup of 2016 were collected. Their rating on 7 March 2016 was used, as it provides the rating of the players a day prior to the start of the world cup. The batting weight of a particular batsman of a team is given by,

$$w_i^* = \frac{r_i}{sum(r_i)} \times 11 \quad (4)$$

where r_i is the batting rating of the player in Twenty20 as provided in the web link mentioned above and $sum(r_i)$ is the sum of batting rating of all the 11 players in the match in question. Thus, w_i^* provides the relative importance of the i^{th} batsman in the team. Thus, as wickets keep

falling the value of $\sum w_i^*$ increases, and this is an indication that the team's wicket strength is decreasing.

To repeat, the purpose of the bowling team is to prevent the batting team from reaching the target score before its resources are depleted. The Duckworth-Lewis Full Table for Twenty20 matches gives the percentage of resources left to the batting team at the end of each ball depending on the number of wickets lost (Bhattacharya *et al*., 2011). Subtracting the value from 100 gives *RU*, which indicates the percentage of resources used. This is a function of the number of overs consumed by the batting team and the number of wickets it has lost. Thus, *RU* can be used as a measure of the change in pressure due to the bowling resources consumed and the wickets lost. The loss can be quantified by $exp(RU/100)$. Since the resources consumed due to wickets lost is present in both $exp(RU/100)$ and $exp(\sum \omega_i^*/11)$ the average of both are taken in (1).

With the changes proposed, the only difference in PI takes place in the second exponent, thus:

$$PI^* = \left(\frac{CRRR}{IRRR}\right) \text{x } \frac{1}{2}\left[\exp\left(RU/100\right) + \exp(\Sigma w_i^*/11)\right] \quad (5)$$

The Pressure Index is just a measure of how big or small the pressure is compared to the starting value of 1 (one). Obviously, the smaller the Pressure Index value the better it is for team B. A value of 1 is neutral, which means that the pressures on the two teams are equally balanced. A Pressure Index value greater than 1 implies that the pressure on the batting team is larger than on the bowling team, whereas a value smaller than 1 implies that the bowling team is in a stronger position as determined by the match situation. Obviously the Pressure Index varies as the innings progresses and depends to a large extent on the match stage during which the partnership lasted.

Function of Pressure Index

To understand the working of the Pressure Index, the India versus Bangladesh match played on 23 March 2016 in Bangalore can be used as example. This was the 25th match of the Twenty20 World Cup. Bangladesh won the toss and put India in to bat. India scored 146 for 7 in 20 overs. Then the chase began. The required run rate for Bangladesh was 7.35. Bangladesh was steadily approaching its target. At the end of the 19th over, Bangladesh's score was 136 for 6. They required only 11 runs in the last over, with two very experienced batsmen, Mahmudullah and Mashfiqur Rahim at the crease, against an unproven bowler, Pandya. Rahim hit Pandya for consecutive 4s in the 2nd and 3rd balls of the over, so Bangladesh needed only 2 runs in the next 3 balls to win. But Pandya dismissed the two set batsmen in his next two deliveries and the last ball resulted in a run out. Bangladesh lost the match by one run.

Figure 1 depicts the values of the Pressure Index. One can observe how the pressure changes for the different match situations. In the inset of Figure 1, the change in the Pressure Index corresponding to different events in the match in the last two overs can be clearly seen. The main graph in Figure 1 shows it all, but the inset gives a zoomed view of the most dramatic part of the match. In the 19th over, Bangladesh scored only 5 runs, which was less than the required rate, so there was a steady increase in pressure. With Rahim hitting two consecutive 4s in the 2nd and 3rd balls of the 20th over the pressure fell sharply. But then came the consecutive dismissals, and the pressure increased steeply.

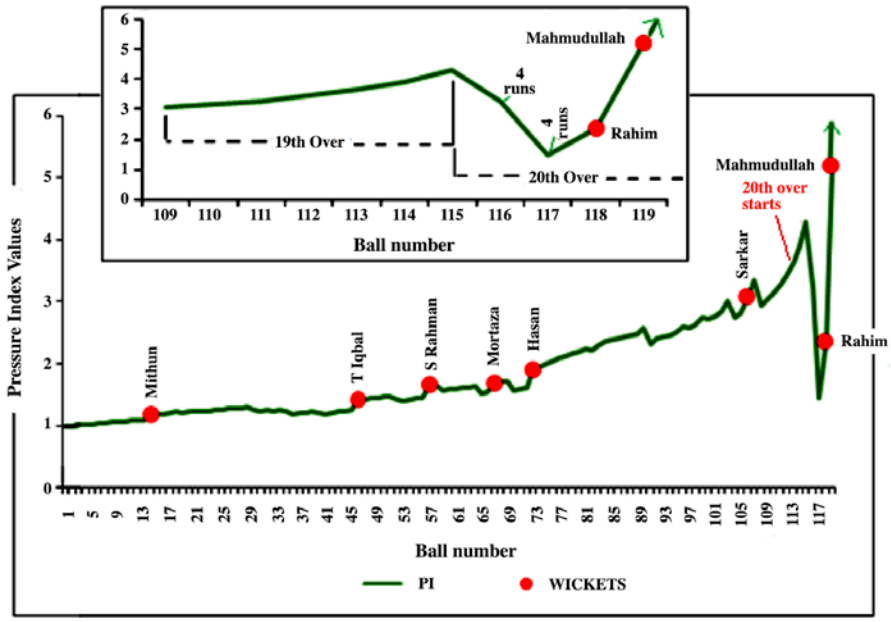

Figure 1. **PRESSURE INDEX IN INDIA VS. BANGLADESH MATCH IN TWENTY20 WORLD CUP OF 2016**
(*Inset shows fluctuation in Pressure Index in last two overs of Bangladesh innings.*)

Deducing best partnership from Pressure Index

Defining PI_{si} as the Pressure Index value at the start and PI_{ci} as the Pressure Index value at the closing of the i^{th} partnership, which lasted for b_i balls (say), then we define,

$$\Delta PI_i = \frac{PI_{si} - PI_{ci}}{b_i} \times 100 \qquad (6)$$

as a measure of the pressure differential at the start and at the closing of the i^{th} partnership for each ball faced multiplied by 100. A batting pair that can diminish the pressure from what it was at the beginning of their partnership is characterised by a positive value of ΔPI_i. The best partnership of the match can be identified as that which has a maximum value of ΔPI_i. The same process can also be used to find the best partnership in the entire tournament. However, the actual quality of a partnership may not be properly judged from just a few balls. In order to judge a partnership, it has to endure for a reasonable period – or, more precisely, for a significant number of balls. It is difficult to decide on what constitutes a significant number of balls, but in Twenty20 cricket 12 balls may be considered, as it is equal to 10% of the total bowling resources available. Therefore, any partnership that faces at least 12 balls in an innings can be considered for evaluation. Now the i^{th} partnership can be defined as the best partnership (while chasing) in a match or in the tournament if,

$$\Delta PI_i > \Delta PI_k \qquad (7)$$

where k is any other partnership in the match/tournament that lasted for at least 12 balls. Following the above process the partnership score (for all partnerships that lasted for at least 12 balls) of the Bangladesh innings for the match for which Figure 1 was drawn is provided in Table 1 below. The scores show that none of the batting pairs could decrease the pressure of the batting team, as indicated by the negative values of ΔPI_i.

***Table 1*. PARTNERSHIP PERFORMANCE SCORES IN BANGLADESH INNINGS IN MATCH AGAINST INDIA IN TWENTY20 WORLD CUP OF 2016**

Batting partners	Runs	Balls faced	Strike rate	ΔPI_i
Mithun/Iqbal	11	14	78.57	-1.1569
Iqbal/Rahman	44	32	137.50	-0.6400
Sarkar/Mahmudullah	31	34	91.18	-3.0351

Computing performance of batting partners in the first innings

In order to measure the performance of batting partners in the first innings of a match, the Pressure Index of the first innings is computed. However, computing a Pressure Index for the first innings is not as straightforward as it is in the second innings. This is because, unlike the second innings, there is no fixed target runs in the first innings. Also, the Pressure Index formula is highly dependent on the target score. Thus, in the absence of a target score, the Pressure Index in the first innings seems difficult to attain. It is not reasonable to think that the team batting first just keeps scoring without having any target in mind. The team that bats first sets itself a target based on its assessment of pitch and match conditions, the strength of its opponents, the weather, etc. The team members start batting and after some time they realise that their target was either too high or too low and they then adjust their target. Several times during the post-match presentation captains have expressed such views. One such example follows.

In the third Twenty20 match of the series played between England and India at Bengaluru on 1 February 2017, India batted first and scored 202 for 6 in their 20 overs and in reply England were all out for 127 in 16.3 overs. India won the match by 75 runs. In the Indian innings, at the end of the 17th over the score was 153/3 and the run rate was 9 runs per over. But in the 18th over, bowled by Chris Jordan and with M.S. Dhoni and Yuvraj Singh at the crease, the runs scored were 1, 6, 6, 4, 6 and 1. A total of 24 runs in that over took the scoring rate close to 10 runs per over. After the 17th over, the target at the end of the Indian innings was expected to be around 180; eventually it went past 200 in 20 overs. The expectation is revealed in a comment made by the India captain, Virat Kohli, during the presentation ceremony of the match, "*…the one over from Chris Jordan to Yuvi, that was the momentum changer for us. We were thinking about 175 to 180 but that's the ability he has. He pushed us up 200*."

Thus, it is assumed that the first innings target is not a constant but a variable, and it is reset based on the match situation. But one needs to define an initial target that the team batting first thinks of attaining when it starts its innings. This target is generally based on the previous international Twenty20 matches played in that venue.

The initial target is taken to be $T_0 = \mu + \sigma$ where μ is the average runs scored by the teams batting first in the international Twenty20 matches played in the same venue and σ is the

corresponding standard deviation. If the runs scored in the first innings of international Twenty20 matches are considered to be normally distributed, then there is only a 16 per cent chance that the team batting first will score more than T_0. Accordingly, T_0 is assumed to be the initial target for the team batting first in an international Twenty20 match.

With the fall of every wicket, a new partnership starts and so it is expected that the new batting partner comes in with some instructions from the dressing room about how to approach the game, given the current match situation. Accordingly, the following formula for a reset target score at the end of each partnership is proposed:

$$T_1 = T_0 \text{ and}$$

$$T_t = R_{t-1} + (100 - RU_{t-1}) \times Max\left(\frac{T_0}{B}, \frac{R_{t-1}}{B_{t-1}}\right) \qquad \text{for } t=2, 3 \qquad (8)$$

where R_{t-1}, RU_{t-1} and B_{t-1} denote the total runs scored, the resources utilised and the number of balls bowled up to the end of the most recently concluded partnership respectively. It can occur that no wicket falls. In such a case the team batting first will definitely reset its targets depending on the progress of the team at different time points. In such cases the target resetting can be done at the end of 6th over (end of power play), 10th over (half way through the innings) and during the 15th over (3/4th of their innings), using the formula in (8). The other calculations are similar to those of the Pressure Index defined in (5), with T replaced by T_t in the calculation of *CRRR*. The other calculations related to the partnership performance are as explained in the previous sub-section of the methodology.

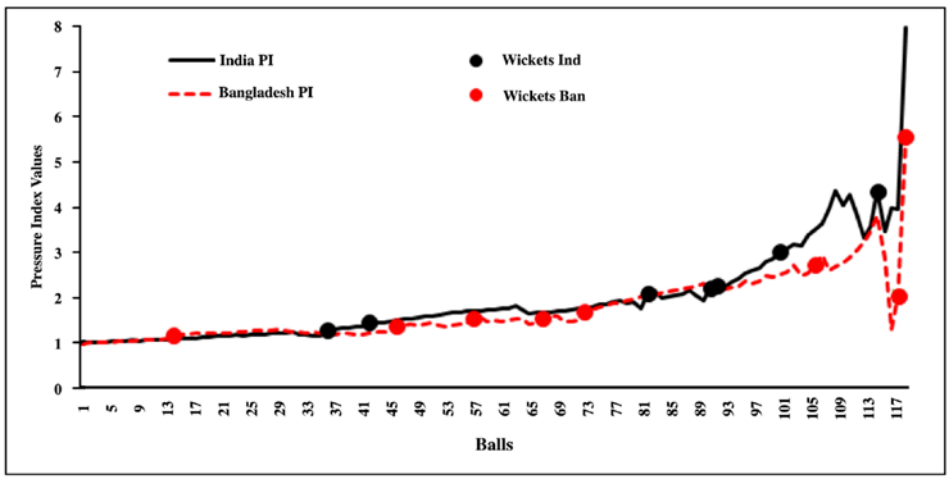

Figure 2. **PRESSURE CURVES OF FIRST INNINGS (INDIA PI) AND SECOND INNINGS (BANGLADESH PI) OF INDIA VS. BANGLADESH MATCH IN TWENTY20 WORLD CUP OF 2016**

Figure 2 depicts the pressure indices of the India vs. Bangladesh match of the World Cup that was referred to earlier for both the innings. The pressure curve of the Indian innings (first innings of the match) is marked with the bold line and that of the Bangladesh innings (second innings of the match) is drawn with the dotted line. Both the pressure curves did not return to zero indicating that in both the innings the targets could not be attained. But Bangladesh was closer to their target than India. The partnership performance of the first innings and that of the second innings are strictly speaking not comparable with each other. More precisely, the partnership performances of the second innings are not placed in the same scale as those of the first innings, as the target score does not offer an identical challenge to both teams. While the target score remains fixed for the team batting second, for the team batting first the target is reset based on the match situation.

RESULTS AND DISCUSSION

To reveal the working of the model, it is necessary to apply it to live data and watch how it works. For this purpose, the Twenty20 world cup played in 2016 in India was considered. The tournament was played from 8 March 2016 to 3 April 2016. Although 16 countries participated, the second round of the tournament was played by the top 10 teams (called the round of 10) out of the 16. The teams were divided into two groups, namely Group 1 with West Indies, England, Sri Lanka, South Africa and Afghanistan; Group 2 with India, Pakistan, Australia, New Zealand and Bangladesh.

The teams in Group 1 played against each other and two top teams of the group went to the next round (the semi-finals). This was also the case with Group 2, so from the round of 10 till the final, 27 matches were played in the tournament. The Pressure Index as discussed in sub-section, Pressure Index, of the methodology section was computed for each of these 27 matches for the second innings.

***Table 2*. PARTNERSHIP PERFORMANCE SCORES IN WORLD CUP TWENTY20 OF 2016 DURING RUN CHASE (SECOND INNINGS)**

Pair names	Country	Opponent	ΔPI_i	Comment	Runs	Ball	SR
Samuels/Brathwaite	West Indies	England	11.9698	Final	54	25	216.00
Mathews/Dilshan	Sri Lanka	Afghanistan	10.9082	Match 16	42	22	190.91
Dhoni/Kohli	India	Australia	8.5962	Match 31	67	31	216.13
Dhoni/Kohli	India	Pakistan	7.0644	Match 19	35	23	152.18
Amla/De Villiers	South Africa	Sri Lanka	6.8635	Match 32	46	27	170.37
Russell/Simmons	West Indies	India	5.3482	Semi-Final	80	39	205.13
Russell/Gayle	West Indies	England	4.8923	Match 15	70	35	200.00
Buttler/Root	England	New Zealand	4.4574	Semi-Final	49	29	168.97
Maxwell/Marsh	Australia	Bangladesh	4.0351	Match 22	22	12	183.33
Russell/Fletcher	West Indies	Sri Lanka	3.6712	Match 21	55	33	166.67
Root/Ali	England	South Africa	2.8347	Match 18	33	16	206.25

Using the method discussed in the third sub-section of the methodology section, partnership scores were computed for all the partnerships of the tournament from the round of 10 onwards, provided the partnership survived at least 12 balls. In a similar fashion, the computation for the pressure index is done for the first innings as described in the results section and accordingly the partnership performances were computed for all 27 matches using the process discussed above. The data for this purpose was collected from the website: http://www.espncricinfo.com/icc-world-twenty202016/engine/series/ 901359.html.

Table 2 shows the 10 best partnerships in the second innings of the tournament. This is the run chasing phase. Partnerships that survived at least 12 balls and got a positive score of $\Delta PI_{i,}$ indicating the partnerships that could diminish the pressure for the team batting second were taken into account. This table provides the incremental batting partnership performances while chasing. From scores it can be seen that the partnership of Samuels and Brathwaite in the final of the tournament was deemed the best, followed by the one by Dhoni and Kohli in India's group match against Australia. The West Indies figured in four partnerships out of nine, which says something about the reason for their success in the tournament.

Table 3. **PARTNERSHIP PERFORMANCE SCORES IN WORLD CUP TWENTY20 OF 2016 DURING TARGET SETTING (FIRST INNINGS)**

Pair Name	Country	Opponent	ΔPI_i	Comment	Runs	Ball	SR
Ali/Willey	England	Afghanistan	185.9665	Match 24	57	33	172.73
Mahmudullah/Rahim	Bangladesh	Australia	114.8729	Match 22	51	28	182.14
Kohli/Dhoni	India	West Indies	76.65669	Semi Final 2	64	27	237.04
Smith/Watson	Australia	Pakistan	45.61712	Match 26	74	38	194.74
Miller/Duminy	South Africa	England	36.64172	Match 18	60	27	222.22
Morgan/Buttler	England	Sri Lanka	27.18396	Match 29	74	39	189.74
Duminy/Miller	South Africa	Afghanistan	25.99409	Match 20	30	14	214.29
Jadeja/Dhoni	India	Bangladesh	12.18471	Match 25	20	14	142.86
Perera/Kulasekara	Sri Lanka	West Indies	4.828594	Match 21	25	16	156.25
Hafeez/Afridi	Pakistan	Bangladesh	4.605482	Match 14	42	17	247.06

Table 3 presents the top 10 partnership performances in the first innings of the Twenty20 World cup of 2016 in all the matches of the tournament from the round of 10 onwards. Thus, the target setting phase is considered here. All pairs that survived at least 12 balls in the first innings were considered again. As before, this table documents incremental batting partnership performances while target setting. The best partnership was that of M. Ali and D.J. Willey of England against Afghanistan in the 24th match, and the second best that of Mahmudullah and M. Rahim of Bangladesh against Australia in the 22nd match.

CONCLUSION

The process of computing performance measures for partnerships in Twenty20 cricket can be extended to one-day matches as well. The measure is based on the Pressure Index earlier developed by Bhattacharjee and Lemmer (2016), with some advances in terms of player-specific weights w_i and the computation of the Pressure Index for the first innings of limited overs matches, aspects that were not addressed in the previous work.

If the partnership scores are computed for a series of matches of a given team, one can identify the partnerships that bat well under pressure. This can help the team management in determining the batting order so that such partnerships that play reasonably well under pressure can occur more frequently. Which opening batting pair to send in first is an important decision for the team management in any form of cricket, including Twenty20. The opening pair in Twenty20 cricket generally enjoys a major share of the powerplay resources –that is, the first six overs of a full-length Twenty20 match where only two players can field the ball outside the 30 yards circle during powerplay. Therefore, the opening batting partners are likely to play more attacking shots and excel the rate of scoring runs.

Taking advantage of six powerplay overs helps a team to reduce the pressure of the match and eventually decrease the proposed Pressure Index value. Also the opening pairs of a team are more frequently changed in Twenty20 cricket than in other formats. This method outlined in this article can thus be used to decide the best opening partners for a given team in Twenty20 cricket.

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