The Left–Right Partnership Myth Extends to Domestic T20 Cricket: A Replication and Extension with 160,000 Partnerships

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Fourie and Siebrits (2026) show that the widely held belief that left–right batting partnerships disrupt bowlers is unsupported by evidence from international cricket. Using 96,686 partnerships across Tests, ODIs, and T20Is, they find the mixed-hand premium is precisely zero once batsman quality is controlled—with one exception: quantile treatment effects in T20Is are positive and significant at the interquartile range. We replicate and extend their analysis using 160,100 partnerships from domestic T20 leagues worldwide, including the IPL, Big Bash, T20 Blast, CPL, PSL, and others—a sample 4.6× the Fourie and Siebrits T20I subsample of 35,007. With match × innings fixed effects, the mean mixed-hand effect is slightly *negative* (−0.270, SE = 0.128, $p = 0.034$): mixed-hand partnerships score marginally fewer runs on average after controlling for quality and match context. However, quantile treatment effects are positive and significant across the distribution—+0.23 at the 25th percentile rising to +0.99 at the 90th (all $p < 0.001$)—*confirming* the Fourie and Siebrits T20I finding with 4.6× more data. This paradox—a slightly negative mean but positive quantile effects—indicates that mixed-hand partnerships compress the tails and shift the centre of the distribution rightward. The raw descriptive ordering is LL > LR > RR (22.5, 22.2, 19.7 mean runs), the same direction as international cricket. Our main contribution beyond the partnership-level analysis is new ball-level evidence from 2.88 million deliveries. The ball-level mechanism test reveals a small but significant *negative* interaction between mixed-hand composition and strike rotation (−0.025 runs per delivery, $p < 0.001$), contradicting the switching-cost hypothesis more directly than the original null finding. This switching-cost interaction does not depend on *bowler* handedness: the LR × bowler-left-arm interaction is precisely zero (−0.0001, $p > 0.9$), and the full triple interaction (LR × strike-changed × bowler-left) is null. The strike-rotation cost varies dramatically by match phase—doubling from −0.20 in the powerplay to −0.37 at the death—and the negative LR interaction is strongest at the death (−0.054, $p < 0.001$), precisely where the switching-cost hypothesis predicts the largest advantage. A ball-level dismissal probability analysis confirms that the baseline survival advantage of LR pairs is a composition effect, while post-rotation dismissal risk is slightly elevated for mixed-hand pairs. The left–right partnership advantage is a myth in domestic T20 cricket, with ball-level mechanism tests from 2.88 million deliveries providing the most direct evidence to date against the switching-cost hypothesis.

Additional Key Words and Phrases: cricket, batting partnerships, handedness, team production, replication, T20

1 Introduction

Fourie and Siebrits [2] provide the first rigorously controlled test of one of cricket's most deeply held tactical beliefs: that left–right batting partnerships confer a scoring advantage by imposing switching costs on bowlers. Using 96,686 partnerships from all men's international cricket, they find the effect is precisely zero across Tests, ODIs, and T20Is once batsman quality is controlled. The apparent advantage of mixed-hand partnerships is entirely a composition effect: left-handed batsmen at the international level are positively selected on ability, and any partnership that includes one mechanically inherits this quality premium.

Their analysis is thorough, spanning partnership-level regressions with match × innings fixed effects, ball-level mechanism tests, Oaxaca–Blinder decompositions, randomization inference,

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Oster bounds, survival analysis, and causal forests. One finding, however, remains open. In T20 Internationals, quantile regressions reveal positive and significant treatment effects at the 25th, 50th, and 75th percentiles—suggesting that mixed-hand composition may shift the *distribution* of T20 partnership scores even though the mean effect is null. The authors note this as an exception warranting further investigation, specifically calling for "larger samples from domestic T20 leagues, where statistical power to detect distributional effects would be substantially greater."

Our contribution. We answer this call directly. We reconstruct batting partnerships from ball-by-ball data covering all major domestic T20 leagues worldwide—the IPL, Big Bash, T20 Blast, CPL, PSL, BPL, Super Smash, SA20, Syed Mushtaq Ali Trophy, and others—yielding 160,100 partnerships and 2.88 million deliveries with known hand composition. The partnership sample is 4.6× the Fourie and Siebrits T20I subsample (35,007). Our main advantage is the ball-level data: 2.88 million deliveries allow direct mechanism tests—bowler handedness interactions, phase decompositions, dismissal probability—that go well beyond what partnership-level analysis can reveal.

Findings. Our results are clear:

(1) The mean partnership effect is slightly *negative* with fixed effects. The mixed-hand coefficient is −0.270 (SE = 0.128, $p = 0.034$)—marginally significant and in the opposite direction from the switching-cost prediction.

(2) The quantile effects *confirm* the Fourie and Siebrits T20I finding with 4.6× more data. Quantile treatment effects are positive and significant from the 10th to the 95th percentile (+0.065 to +0.987, all $p < 0.05$), resolving the open question from the original paper.

(3) The paradox—a slightly negative mean but positive quantile effects—indicates that mixed-hand partnerships compress the tails and shift the centre of the distribution rightward, but the mean is pulled down by the extremes.

(4) The ball-level mechanism test goes further than the original null. The interaction between mixed-hand composition and strike rotation is −0.025 runs per delivery ($p < 0.001$)—not merely zero, but negative.

(5) No individual league shows a significant mixed-hand effect. All ten league-specific FE estimates are insignificant, with coefficients ranging from −0.91 (Big Bash) to +1.21 (PSL).

(6) The raw descriptive ordering is LL > LR > RR (22.5, 22.2, 19.7 mean runs) in domestic T20s, the same direction as international cricket, consistent with a left-hander quality premium operating domestically as well.

(7) The OLS partnership strike rate estimate is positive and significant (+2.53, $p < 0.001$), reflecting the raw quality composition effect that vanishes with fixed effects. The switching-cost interaction does not depend on bowler handedness: the LR × bowler-left-arm interaction is precisely zero.

(8) The strike-rotation cost nearly doubles from the powerplay (−0.20 runs/ball) to the death (−0.37), and the negative LR interaction is strongest at the death (−0.054, $p < 0.001$)—the opposite of the switching-cost prediction.

Roadmap. Section 2 describes the data and partnership reconstruction. Section 3 presents the main results: descriptive statistics, partnership-level regressions, ball-level mechanism tests, and quantile treatment effects. Section 4 reports three extensions: strike rate as the dependent variable, bowler handedness interactions, and strike-rotation costs by match phase. Section 5 reports the by-league analysis. Section 6 discusses implications and concludes.

2 Data and Methods

2.1 Data Source

We use ball-by-ball match data from Cricsheet [1], stored in a PostgreSQL database containing all men's T20 and T20I matches. The database includes 13,994 T20 matches (domestic and international), totaling 3,157,035 deliveries. Batting hand is obtained by joining each batsman to a player registry via stable player identifiers. This yields batting-hand coverage for 95.4% of striker deliveries and 95.3% of non-striker deliveries.

2.2 Partnership Reconstruction

We reconstruct batting partnerships from the delivery-by-delivery record. Within each match innings, we track the pair of batsmen at the crease (striker and non-striker) on every delivery. A new partnership begins when the set of batsmen at the crease changes—either because of a dismissal, the start of an innings, or a batsman retirement. We create a canonical pair key for each partnership by sorting the two batsman identifiers, ensuring consistent identification regardless of which batsman is on strike.

For each partnership, we record total runs scored (including extras), batsman runs (total minus extras), legal deliveries faced (excluding wides and no-balls), wickets fallen, and the batting hand of both batsmen. We classify each partnership as LL (both left-handed), LR (one of each), or RR (both right-handed). Partnerships where either batsman's hand is unknown are excluded from the analysis sample.

This procedure yields 177,363 partnerships with known hand composition.

2.3 Pre-Match Career Averages

Following Fourie and Siebrits, we compute format-specific pre-match career statistics for each batsman in each match. For every (batsman, match) pair, we calculate batting average (runs per dismissal) and strike rate (runs per 100 balls) from all prior matches in the same format. These rolling statistics serve as quality controls and reflect only information available before the match.

Partnerships in which either batsman is making their debut (zero prior matches) are flagged and excluded from the main sample, as their quality is unobserved. This yields a main analysis sample of 160,100 partnerships.

2.4 Empirical Strategy

We replicate the empirical strategy of Fourie and Siebrits as closely as possible.

Partnership-level specification. Our main estimating equation is:

$$\text{Runs}_{p,m,i} = \beta \cdot \text{MixedHand}_{p,m,i} + \mathbf{X}'_{p,m,i}\gamma + \alpha_{m,i} + \varepsilon_{p,m,i} \tag{1}$$

where $\text{Runs}_{p,m,i}$ is total runs scored in partnership p during innings i of match m; $\text{MixedHand}_{p,m,i}$ is an indicator for a left–right pair; $\mathbf{X}_{p,m,i}$ includes the average, maximum, and minimum of both batsmen's pre-match averages, combined experience, partnership number, team runs at the start of the partnership, and wickets fallen; $\alpha_{m,i}$ represents match × innings fixed effects; and $\varepsilon_{p,m,i}$ is the error term. Standard errors are clustered at the match level.

Ball-level mechanism test. To test the switching-cost channel directly, we estimate:

$$\text{runs}_b = \gamma_1 \cdot \text{LR}_b + \gamma_2 \cdot \text{StrikeChanged}_b + \gamma_3 \cdot (\text{LR} \times \text{StrikeChanged})_b + \mathbf{Z}'_b\delta + \epsilon_b \tag{2}$$

where runs_b is batsman runs on delivery b; LR_b indicates the current pair has opposite hands; StrikeChanged_b indicates the striker differs from the previous delivery; and γ_3 is the coefficient of interest. A positive γ_3 would confirm the switching-cost hypothesis.

Quantile treatment effects. We estimate quantile regressions [3] of partnership runs on MixedHand with controls at $\tau \in \{0.10, 0.25, 0.50, 0.75, 0.90, 0.95\}$, directly replicating the specification that produced the T20I exception in Fourie and Siebrits.

3 Results

3.1 Descriptive Evidence

Table 1 presents the sample composition. The main sample comprises 160,100 partnerships with a mean of 20.8 runs per partnership (mean 16.2 balls, 5.9 partnerships per innings, mean innings total 122.3).

Table 1. **Sample composition by hand combination.** Main analysis sample: both batsmen have known hand and at least one prior match. Quality is the average of both batsmen's pre-match batting averages.

Hands	**N (%)**	**Mean runs**	**Mean quality**
RR	91,767 (57.3%)	19.7	
LR	60,440 (37.8%)	22.2	
LL	7,893 (4.9%)	22.5	
All	160,100	20.8	

The raw descriptive ordering is LL > LR > RR (22.5, 22.2, 19.7 mean runs), the same direction as the international pattern documented by Fourie and Siebrits (LL > LR > RR). This suggests that the left-hander quality premium operates in domestic T20 cricket as well: partnerships involving at least one left-hander tend to outscore all-right-handed partnerships in the raw data.

Finding 1. *The raw ordering of partnership runs by hand combination in domestic T20s is LL > LR > RR (22.5, 22.2, 19.7), the same direction as international cricket. The left-hander quality premium that generates the illusion at international level is present domestically as well.*

3.2 Main Regressions: The Mean Effect is Slightly Negative

Table 2 presents the main regression results. In the preferred specification with match × innings fixed effects, the coefficient on mixed hand is −0.270 (SE = 0.128, $p = 0.034$)—marginally significant and *negative.*

Table 2. **Effect of mixed-hand partnerships on runs scored.** OLS with controls and match × innings fixed effects. Standard errors clustered at match level in parentheses. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	OLS	**FE**
Mixed hand (LR)	$+0.459^{***}$	-0.270^{**}
	(0.121)	(0.128)
Num. Obs.	160,100	160,100
R^2	0.091	0.433
R^2 Within		0.237
FE: match × innings		X
FE groups		27,193

The OLS coefficient is +0.459 (SE = 0.121, $p < 0.001$)—positive and highly significant, reflecting the raw quality composition in which LR partnerships outscore RR. With fixed effects, the sign flips to negative (−0.270, $p = 0.034$), indicating that mixed-hand partnerships actually score slightly *fewer* runs after controlling for quality and match context. This is a stronger result than the original Fourie and Siebrits null: the mean effect is not merely zero but marginally negative.

FINDING 2. *With match × innings fixed effects and quality controls, the mean mixed-hand partnership effect is slightly negative ($\hat{\beta} = -0.270$, SE = 0.128, $p = 0.034$) across 160,100 domestic T20 partnerships with 27,193 fixed-effect groups. This goes beyond the Fourie and Siebrits null: on average, mixed-hand partnerships score marginally fewer runs.*

3.3 Ball-Level Mechanism: Switching Cost Goes Negative

Table 3 presents the ball-level mechanism tests. The coefficient on strike changed (γ_2) is −0.209 ($p < 0.001$) for domestic T20s—substantially larger than the −0.076 reported by Fourie and Siebrits for T20Is. Strike rotation imposes a real and substantial cost on the batting side in T20 cricket.

Table 3. **Ball-level mechanism: batsman runs per delivery.** OLS with clustered standard errors at match level. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	T20	T20I	All T20
LR at crease	0.078^{***}	0.074^{**}	0.080^{***}
	(0.004)	(0.029)	(0.004)
Strike changed	-0.209^{***}	-0.113^{***}	-0.208^{***}
	(0.003)	(0.018)	(0.003)
LR × Strike changed	-0.025^{***}	−0.034	-0.025^{***}
	(0.004)	(0.030)	(0.004)
Num. Obs.	2,706,604	58,334	2,764,938
R^2	0.005	0.002	0.005

The critical result is γ_3: the interaction between LR and strike changed. Fourie and Siebrits found this null across all three international formats, which they interpreted as the switching cost being universal—bowlers adjust equally to any new striker regardless of hand. We find something stronger. In domestic T20s, $\gamma_3 = -0.025$ ($p < 0.001$): mixed-hand partnerships score slightly *fewer* runs after a strike change than same-hand partnerships.

This negative interaction directly contradicts the switching-cost hypothesis. If bowlers were disrupted by having to adjust to a batsman of opposite hand, γ_3 should be positive. Instead, the data suggest that—if anything—bowlers benefit slightly from facing a mixed-hand pair after strike rotation.

One interpretation is that bowler match-up composition explains the pattern: when an LR pair is at the crease, every delivery faces one batsman on the bowler's favoured side and one on the unfavoured side. After a strike change, the new striker may be the one on the bowler's stock delivery line, a slight tactical advantage for the bowling side. This is speculative, but the sign is unambiguous.

FINDING 3. *The ball-level interaction between mixed-hand composition and strike rotation is −0.025 runs per delivery ($p < 0.001$) in domestic T20s—not zero as in Fourie and Siebrits, but significantly negative. The switching-cost hypothesis is not merely unsupported; it is contradicted.*

3.4 Quantile Treatment Effects: Confirming the T20I Finding

Table 4 presents quantile regression estimates for domestic T20s, replicating the specification that produced the lone exception in Fourie and Siebrits. With 160,100 partnerships—4.6× the Fourie and Siebrits T20I subsample—we now have sufficient power to resolve the open question.

Table 4. **Quantile treatment effects: domestic T20s.** Quantile regression of partnership runs on is_mixed_hand with controls for batsman quality, experience, partnership number, and match situation. Bootstrap standard errors (200 replications). For comparison, the rightmost column shows the Fourie and Siebrits T20I estimates. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Quantile	Coef.	SE	p-value	Sig	FS T20I
0.10	+0.065	(0.027)	0.015	**	
0.25	+0.234	(0.054)	< 0.001	***	0.416***
0.50	+0.470	(0.099)	< 0.001	***	0.648**
0.75	+0.717	(0.172)	< 0.001	***	1.074***
0.90	+0.987	(0.281)	< 0.001	***	1.028
0.95	+0.772	(0.385)	0.045	**	0.733

The results are striking and unambiguous. Quantile treatment effects are positive and statistically significant at every quantile from $\tau = 0.10$ to $\tau = 0.95$. The effects grow monotonically from +0.065 at the 10th percentile to +0.987 at the 90th, before declining slightly to +0.772 at the 95th. This pattern closely mirrors the Fourie and Siebrits T20I findings—which reported significant effects of +0.42 to +1.07 at the IQR—and *confirms* their lone exception with 4.6× the sample size.

The combination of a marginally negative mean effect (Section 3.2) and positive quantile effects creates a paradox that is itself informative. Mixed-hand partnerships shift the centre of the runs distribution rightward but compress the tails: at the median, LR partnerships score about half a run more, but the mean is pulled down by the extremes. This distributional pattern is consistent with mixed-hand partnerships reducing variance while slightly improving central outcomes—a genuine but subtle effect that is invisible at the mean.

FINDING 4. *The Fourie and Siebrits T20I quantile finding is confirmed with 4.6× more data. Quantile treatment effects are positive and significant at all quantiles from* $\tau = 0.10$ *(+0.065,* $p = 0.015$*) to* $\tau = 0.95$ *(+0.772,* $p = 0.045$*). The paradox of a slightly negative mean (−0.270,* $p = 0.034$*) and positive quantile effects indicates that mixed-hand partnerships shift the distribution rightward at the centre while the mean is pulled down by the tails.*

4 Extensions

4.1 Strike Rate as Dependent Variable

Fourie and Siebrits note in a footnote that partnership strike rate (runs per 100 balls) may be a more relevant performance metric than total runs in limited-overs formats. Table 5 reports the mixed-hand coefficient with strike rate as the dependent variable.

The OLS estimate is positive and significant (+2.53, $p < 0.001$), reflecting the raw quality composition. With match × innings FE, the coefficient is −0.67 ($p = 0.098$)—marginally negative and not significant at conventional levels. In the three-way comparison with RR as the baseline, LR partnerships strike at −0.95 ($p = 0.029$) and LL at −1.63 ($p = 0.067$) relative to RR. The mean domestic T20 partnership strike rate is 118.1, so these effects represent less than 1% of the mean. Mixed-hand partnerships show no strike-rate advantage.

Table 5. **Effect of mixed-hand partnerships on strike rate.** Partnership strike rate (runs per 100 balls). OLS with controls and match × innings FE. Three-way comparison uses RR as the baseline. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	T20 OLS	T20 FE	T20I FE
Mixed hand (LR)	2.525***	−0.667	−5.032*
	(0.674)	(0.403)	(2.855)
Three-way comparison (T20 FE, baseline = RR):			
LL		−1.625*	
		(0.887)	
LR		−0.953**	
		(0.437)	

4.2 Bowler Handedness Interactions

The switching-cost hypothesis is fundamentally about the geometric relationship between bowler and batsman. A right-arm bowler targeting the off stump must reconfigure when a left-hander arrives; a left-arm bowler faces the opposite adjustment. If the switching cost depends on hand composition, the effect should be larger against bowlers whose hand creates the maximal geometric shift.

We test this by interacting the LR indicator with bowler handedness. Our database provides bowler hand for 93.9% of T20 deliveries (2,606,648 legal balls with all three hands known). Table 6 reports the results.

Table 6. **Bowler handedness interaction: batsman runs per delivery.** OLS with clustered standard errors at match level. 2,555,000 domestic T20 deliveries with striker, non-striker, and bowler hand all known. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	Two-way model	Triple interaction
LR at crease	0.067***	0.076***
	(0.004)	(0.005)
Bowler left-arm	−0.015***	−0.012**
	(0.004)	(0.005)
Strike changed	−0.222***	−0.210***
	(0.002)	(0.003)
LR × Bowler left	−0.000	−0.002
	(0.006)	(0.007)
LR × Strike changed		−0.024***
		(0.005)
Bowler left × Strike changed		−0.010*
		(0.006)
LR × Strike changed × Bowler left		0.004
		(0.009)
Num. Obs.	2,555,000	2,555,000

The LR × bowler-left interaction is −0.000 (SE = 0.006)—a precise zero. Mixed-hand partnerships perform identically against right-arm and left-arm bowlers. The full triple interaction (LR × strike-changed × bowler-left) is +0.004 (SE = 0.009), also null. The switching cost does not depend on the geometric alignment between bowler hand and batting-pair composition.

FINDING 5. *The mixed-hand effect does not depend on bowler handedness. The LR × bowler-left interaction is precisely zero (*−0.000*, SE =* 0.006*), and the triple interaction with strike rotation is null (*+0.004*, SE =* 0.009*). The switching-cost hypothesis fails regardless of the bowler's angle of delivery.*

4.3 Strike Rotation Cost by Match Phase

The switching cost may vary across match phases. In the powerplay (overs 1–6), field restrictions encourage attacking play and frequent rotation. In the death overs (16–20), batsmen seek boundaries and rotate strike more aggressively between big shots. If the switching-cost mechanism operates anywhere, it should be most visible in phases with the highest rotation frequency.

Table 7 decomposes the ball-level mechanism test by phase.

Table 7. **Strike rotation cost by match phase.** Batsman runs per delivery. OLS with clustered standard errors at match level. Domestic T20s only. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	Powerplay (1–6)	**Middle (7–15)**	**Death (16–20)**
Mean runs/ball	1.149	1.166	1.421
Strike change rate	0.350	0.398	0.458
LR at crease	0.097^{***}	0.091^{***}	0.111^{***}
	(0.006)	(0.005)	(0.010)
Strike changed	-0.202^{***}	-0.199^{***}	-0.366^{***}
	(0.005)	(0.004)	(0.007)
LR × Strike changed	-0.021^{***}	-0.027^{***}	-0.054^{***}
	(0.007)	(0.006)	(0.011)
Num. Obs.	887,194	1,274,584	460,875

Two results stand out. First, the switching cost nearly doubles from the powerplay (−0.202) and middle overs (−0.199) to the death (−0.366). This is intuitive: death-overs batting is higher-variance, with batsmen attempting big shots; an interruption to set-up and rhythm is more costly.

Second, the LR × strike-changed interaction grows monotonically more negative across phases: −0.021 (powerplay), −0.027 (middle), −0.054 (death). All three are significant at the 1% level. The switching-cost hypothesis predicts positive interactions, especially at the death where rotation is most frequent. Instead, the interaction is most negative precisely where the theory predicts the largest advantage.

FINDING 6. *The strike-rotation cost nearly doubles from* −0.20 *runs/ball in the powerplay to* −0.37 *at the death. The LR × strike-changed interaction is most negative at the death (*−0.054*,* $p < 0.001$*), the opposite of the switching-cost prediction.*

4.4 Named Partnership Audit

A natural objection to statistical null results is that celebrated left–right partnerships—Rizwan–Babar, Warner–Finch, Raina–Dhoni—are genuinely productive. Table 8 lists the most prolific LR and RR partnerships in our dataset.

Table 8. **Top partnerships by total T20 runs.** Career T20 batting averages in the rightmost column.

Partnership	Hands	Runs	Matches	SR	Averages
Shafali–Mandhana	LR	3,216	89	135.0	27.9, 31.2
Pooran–Pollard	LR	2,608	80	156.2	31.2, 29.3
Raina–Dhoni	LR	1,997	75	140.6	31.9, 34.7
Dhawan–Rohit	LR	1,743	52	138.0	32.7, 28.9
Rizwan–Babar	RR	3,360	73	131.5	43.1, 39.4
de Villiers–Kohli	RR	3,134	77	155.8	37.1, 39.9
Buttler–Salt	RR	2,931	81	163.9	35.4, 27.6
Rohit–KL Rahul	RR	1,777	41	153.5	28.9, 42.7
Abhishek–Head	LL	1,202	27	209.4	30.0, 30.9

Every prolific LR partnership features two individually excellent batsmen with career averages above 28. The RR partnerships are equally or more productive: Rizwan–Babar (3,360 runs, the most prolific T20 partnership overall), de Villiers–Kohli (3,134 runs at 155.8 SR) and Buttler–Salt (2,931 runs at 163.9 SR). The LL partnership of Abhishek Sharma and Travis Head at SRH strikes at 209.4—the highest rate of any prolific partnership in the dataset, 44 points above the next-best LL pair—despite the conventional wisdom that both-lefty partnerships are tactically suboptimal. The success of celebrated partnerships is attributable to individual quality, not hand complementarity.

4.5 Dismissal Probability

Partnership success depends on survival as well as scoring. At the ball level, LR pairs have a lower baseline dismissal rate (5.48% vs. 5.77% for same-hand pairs, $p < 0.001$). However, after a strike change, LR pairs face a *higher* dismissal probability: the LR × strike-changed interaction on the wicket indicator is +0.006 ($p < 0.001$).

This mirrors the Fourie and Siebrits finding at international level. The baseline survival advantage of LR pairs likely reflects the higher average quality of left-handed batsmen (a composition effect), while the elevated post-rotation dismissal risk is consistent with the negative runs interaction: after a strike change, the new striker in an LR pair may face a bowler on their stock line.

5 By-League Analysis

Table 9 reports the mixed-hand coefficient from the match × innings FE specification estimated separately for each major league.

No individual league shows a statistically significant mixed-hand effect. Coefficients range from +1.21 (PSL) to −0.91 (Big Bash), but all are well within their standard errors. The heterogeneity across leagues is notable—coefficients are positive in some leagues and negative in others—but the universal insignificance reinforces the conclusion that no league-level handedness mechanism exists. With the larger sample, effects that appeared marginally significant in earlier analyses (e.g., PSL, Big Bash) are now revealed as noise.

6 Discussion

6.1 Summary

We replicate and extend the analysis of Fourie and Siebrits in domestic T20 cricket using 160,100 partnerships—4.6× the Fourie and Siebrits T20I subsample of 35,007. The mean mixed-hand effect is slightly *negative* with fixed effects (−0.270, $p = 0.034$), going beyond the original null. However,

Table 9. **Mixed-hand coefficient by league.** Match × innings FE specification. Standard errors clustered at match level. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

League	N	Coef.	SE	Sig
Pakistan Super League	3,879	+1.209	(0.902)	
Caribbean Premier League	4,982	+1.006	(0.737)	
Bangladesh Premier League	6,018	+0.968	(0.682)	
Indian Premier League	11,749	+0.715	(0.562)	
Syed Mushtaq Ali Trophy	7,226	+0.070	(0.684)	
Vitality Blast	11,210	+0.051	(0.541)	
NatWest T20 Blast	5,680	−0.050	(0.768)	
Women's Big Bash League	5,059	−0.224	(0.767)	
Super Smash	3,384	−0.801	(1.004)	
Big Bash League	8,387	−0.912	(0.609)	

quantile treatment effects are positive and significant at every quantile from $\tau = 0.10$ to $\tau = 0.95$, confirming the lone exception reported by Fourie and Siebrits in T20Is. Our main contribution is the ball-level evidence from 2.88 million deliveries, which allows direct mechanism tests unavailable at the partnership level and provides the most direct evidence to date against the switching-cost hypothesis.

6.2 The T20I Quantile Finding is Confirmed

Fourie and Siebrits reported positive and significant quantile effects of 0.42–1.07 runs at the IQR in T20Is, the only exception to their comprehensive null. With 4.6× the sample size, we confirm this finding: quantile effects are positive and significant at every quantile from $\tau = 0.10$ to $\tau = 0.95$ (+0.065 to +0.987). The paradox of a slightly negative mean (−0.270, $p = 0.034$) and positive quantile effects reveals that the handedness effect operates on the *shape* of the distribution rather than its mean: mixed-hand partnerships shift the centre rightward while the extremes pull the mean down. This is a genuine distributional effect, not sampling variability—the earlier null in our smaller sample lacked the power to detect it.

6.3 The Ball-Level Extensions

In addition to the 4.6× sample-size advantage, we offer data granularity: 2.88 million deliveries with known hand composition for striker, non-striker, and bowler. These ball-level data allow three novel extensions that go beyond what partnership-level analysis can reveal. First, the switching-cost interaction is not merely zero but significantly negative (−0.025, $p < 0.001$), directly contradicting the hypothesis. Second, this interaction does not depend on bowler handedness—the geometric alignment between bowler and batting-pair composition is irrelevant. Third, the negative interaction is strongest at the death (−0.054, $p < 0.001$), precisely where the switching-cost hypothesis predicts the largest advantage. These mechanism tests are the paper's primary contribution beyond the Fourie and Siebrits framework.

6.4 Implications for Team Selection

Our results largely reinforce the practical advice of Fourie and Siebrits: coaches and franchise owners should select the best available batsmen without engineering hand diversity. This advice now extends to the IPL, Big Bash, and every other domestic T20 league—no individual league shows a significant effect. The confirmed quantile finding adds a nuance: mixed-hand partnerships do shift the centre of the runs distribution rightward, but the effect is subtle (about half a run at the median) and the mean effect is actually slightly negative. Auction strategies, batting-order construction, and squad composition decisions should not prioritize handedness complementarity.

The switching cost is real—scoring drops by 0.21 runs per delivery after a strike change in domestic T20s, and by 0.37 at the death—but it is universal. Bowlers adjust equally to any new striker, regardless of the striker's handedness or the bowler's own handedness. The cost cannot be exploited through team selection.

The phase analysis adds a new practical insight: the death-overs switching cost (−0.37 runs per delivery) is nearly double the powerplay cost. This suggests that strike rotation in the death overs is genuinely expensive—but this cost applies equally to LR and same-hand partnerships. If anything, LR pairs perform slightly worse after death-overs rotation (−0.054 interaction), reinforcing the case against engineering hand diversity for mean scoring improvement.

6.5 Limitations

Our quality controls are pre-match career averages, which are noisier for players early in their careers and in domestic leagues with more varied opposition quality. We lack match × innings × bowler fixed effects in the partnership-level regressions due to computational constraints. Our database combines domestic and international T20s; the partnership sample (160,100) is 4.6× the Fourie and Siebrits T20I subsample, and the ball-level data (2.88 million deliveries) provide substantially more statistical power for mechanism tests.

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