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Running it Twice (or Thrice): Double-Header and Triple-Header Baseball Arbitration

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1. Abstract

Major League Baseball (MLB) uses final offer arbitration (FOA) to set the salaries of certain players. In FOA, the team and the player each submits a proposed salary number, and the arbitrator (in MLB's case, a panel of three arbitrators) is required to select one of the numbers as the award. The rationale for FOA is that it incentivizes each party to submit a reasonable number so that it will be selected by the arbitrator, and if the submitted numbers are closer, settlement is more likely.

Although FOA has historically worked well in MLB, players have been critical of the process in recent years as teams have begun to use the process to their advantage. The root of the problem is that because the award is a binary choice, FOA results in too much variance with (potentially) million-dollar swings in the outcome. This high variance disadvantages the players, who are generally less willing than teams to take risk. It is much easier for teams to play for the long run and take "smart" million-dollar gambles because of their deeper pockets and the ability to spread risk over arbitrations with multiple players over multiple years. But, is there a way to level the proverbial playing field between the teams and players while maintaining the core benefits of FOA?

My paper answers in the affirmative by proposing a variation of FOA based on the probability theorem called the Law of Large Numbers and modeled after the "Running it Twice" poker procedure. My proposal—Double-Header Baseball Arbitration—plays out like regular FOA, except that two different arbitrators, independently of each other, decide which of the parties' numbers to award. If both agree on a number, then that is the award. If they disagree, then the award is the midway point between the two parties' numbers. In another variation, Triple-Header Baseball Arbitration, three arbitrators decide the case independently of the others. If all three agree on a number, then that is the award; but, if the arbitrators split 2-1, the award is set at the applicable two-thirds point between the parties' numbers.

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2. Introduction

Imagine you are on the game show, *Heads or Tails*. The rules of this game show are quite simple. The game show host flips a coin. Heads you get a million dollars. Tails you get nothing. Being a risk averse sort, you would probably want to sell your "spot" on this game show for something approaching $500,000, the expected value of your payout.[2] But, unfortunately, that is not permitted.

However, you are allowed an option that is almost as good: you can have the game show host flip the coin up to 100 times, with each "head" proportionately less rewarded. For example, you could have the host flip the coin twice, with the payout for heads set at $500,000; ten times, with the payout for heads set at $100,000; or 100 times, with the payout for heads set at $10,000 (in each case, the payout for tails remains at $0.) Under each of these options, the expected value of the game remains the same for you: $500,000. However, pursuant to the probability theorem known as the Law of Large Numbers, the probability of your receiving a payout that approximates the $500,000 expected value of the game increases as the number of coin flips increases.[3] For example, you have a 0% probability of receiving a payout between $400,000 and $600,000 if you flip the coin just once, 50% if you flip the coin twice, 66% for 10 flips, and 96% for 100 flips.[4]

Although the game show *Heads or Tails* is fictional, the option of allowing multiple flips is analogous to a procedure called "Running it Twice" that is sometimes used in high stakes cash poker games when tens, if not hundreds, of thousands of dollars are on the line based simply on the next one or two cards in the deck.[5] When there are two players left in the hand, the final card or cards have not yet been dealt, and at least one of the players is "all-in," meaning there are no strategic moves left in the hand, some casinos allow the players to agree to run the remaining cards twice and award half the pot to the winner of each run. This can result in a split pot if each player wins one of the two runs. The objective of "Running it Twice" is a payout that better reflects the true odds, or expected value, of the situation. Phrased another way, the procedure lessens the variance of outcomes.

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[2] To calculate the expected value of a game, each possible outcome of the game is multiplied by its probability. The sum of all of these products is the expected value of the game.

[3] A series of coin tosses is an example of a binomial experiment, which is defined as an experiment with repeated trials, each of which has only two possible outcomes, with a constant probability that a particular outcome will occur in any given trial, and with the outcome of each trial independent of the outcome of any other trial.

[4] The probabilities associated with the possible outcomes in a binomial experiment constitute a binomial distribution and can be determined using a binomial calculator. *See* Binomial Calculator: Online Statistical Table, http://stattrek.com/online-calculator/binomial.aspx.

[5] The "Running it Twice" procedure was used on the televised game show *High Stakes Poker*, which aired on the cable network, GSN, from 2006 to 2011. For a clip from the program using this procedure, *see* Negreanu Harman High Stakes Poker Season 4 Run It Twice (2007, October 5). Retrieved from https://www.youtube.com/watch?v=auS69FVMSuw.

This paper illustrates how the "Running it Twice" concept can be applied in another forum where the competitors are "all in" and millions may be at stake: the MLB arbitration process (MLB Arbitration). After briefly describing the problems that currently plague MLB Arbitration, I propose two solutions based on this concept: Double-Header Baseball Arbitration and Triple-Header Baseball Arbitration.

3. An Unlevel Playing Field: MLB Arbitration Favors the Teams Over the Players

As most fans know, MLB uses FOA to set the salaries of players between their third and sixth years of service, as well as certain players after their second year of service.[6] In FOA, the team and the player each submits a proposed salary number, and the arbitrator (in MLB's case, a panel of three arbitrators) is required to select one of the numbers as the award, with no compromises allowed. The rationale for FOA is that it incentivizes each of the parties to submit a reasonable number so that it will be selected by the arbitrator, and if the submitted numbers are closer, settlement—which is highly valued in the MLB context because hearings could damage the relationship between the team and the player—is more likely. This contrasts with conventional arbitration, where the arbitrator has free range in what to award, and the parties are more likely to submit unreasonable numbers in the belief that the arbitrator will "split the difference." FOA is also a fast and simple process, which is crucial for MLB because of the necessity that the players' salaries be determined before the start of the season (Tulis, 2010).

For decades, FOA appeared to work quite well in MLB, with the vast majority of the cases settling, and both the players and teams largely supportive of the system (Monhait, 2013). However, over the past few years, the procedure has broken down as teams have begun to use the process to their advantage. Both the players and teams now perceive that the teams have the upper hand. In August 2018, super-agent Jeff Berry wrote a memo calling on the players to "attack" the arbitration system, lamenting that the players are now "victimized" by the process as the league has "successfully stagnated arb salaries" (Berry, 2018). In March 2019, the Executive Director of the MLB Players Association blasted the league for making "sport" of MLB Arbitration and undermining "a process designed to produce fair settlements" (Clark, 2019). An article in *The Athletic* reported that MLB's labor relations department was boasting that teams were now settling cases at the "target" numbers the department set for them (or doing even better) almost two out of three times, significantly better than even a few years ago (Craig, 2019).

Recent empirical work also supports the notion that over the past couple of years players are settling cases at figures that are too low. Matt Swartz and the MLB Trade Rumors website developed a model that makes arbitration salary projections based on "compar[isons] to recent players who went through the arbitration process, who played similar positions and who had similar MLB service time" (Swartz, 2015). Daniel Epstein compared these projected arbitration salaries with the actual salaries for nearly all arbitration-eligible players who settled with their team in 2018 and 2019 (Epstein, 2018, 2019). Epstein found that in 2018 the 163 settling players received an average of $150,000

[6] FOA is also called "baseball arbitration" because of MLB's use of the procedure.

less than their projected annual salary and in 2019 the 191 settling players received an average of $90,000 less.

However, while the players have correctly perceived they are now losing the arbitration game, their ire against the behavior of the teams is misdirected as the teams are playing within the rules as currently constituted. Similarly, the solution proposed by some player agents—greater coordination among the players to match the coordination among the teams—is both impractical (30 stable teams compared to more than 150 players and about 60 agents who come and go) and likely ineffective (increased player coordination will not mitigate the players' core disadvantage).

The root of the problem is that because the award is a binary choice, FOA results in too much variance with (potentially) million-dollar swings in the outcome. This high variance disadvantages the players, who are generally less willing than teams to take risk. It is much easier for teams to play for the long run and take "smart" million-dollar gambles because of their deeper pockets and the ability to spread risk over arbitrations with multiple players over multiple years.

Until recently, teams did not fully exploit this advantage. But they are no longer playing nice. Among other things, almost all teams now employ a file-and-trial strategy, in which they refuse to negotiate with the players during the period of approximately one month between the date numbers are submitted to the arbitrators and the date the arbitration hearing takes place (Passan, 2019). This pressures the players to settle on the teams' terms before the numbers are even submitted, or else risk a potential million-dollar loss at a hearing. A testament of the success of this strategy is that despite its use, cases are still settling at an extremely high rate—89% of eligible cases in 2018 and 95% of eligible cases in 2019.

Although some early proponents of FOA believed that the mechanism's high variance encouraged the parties to reach a fair settlement (Chetwynd, 2009), it is now clear that the all-or-nothing nature of FOA is acting more like a cudgel, all but forcing the players to settle for less than their value.

4. Double-Header Baseball Arbitration

But, is there a way to level the proverbial playing field between teams and players while maintaining the core benefits of FOA? My paper answers in the affirmative by proposing a variation of FOA,[7] which I call Double-Header Baseball Arbitration (DHBA). My proposal plays out like regular FOA, except that two different arbitrators, independently of each other, decide which of the parties' numbers to award. If both agree on a number, then that is the award. If they disagree, then the award is the midway point between the two parties' numbers.

By running it twice, DHBA will lessen the variance of award outcomes, which will lead to awards that are substantially more accurate, predictable, and fair. To illustrate, let's take a real-world example

[7] Nedelescu (2013) provides a literature review of previous proposed variations to FOA—such as Combined Arbitration, Double Offer Arbitration, Amended Final Offer Arbitration, and Alpha-Final Offer Arbitration—none of which are based on the "Running it Twice" concept.

of the infamous arbitration between the New York Yankees and their star reliever, Dellin Betances, relating to his salary for the 2017 season. Betances asked for $5 million, while the Yankees countered with $3 million. Forced to choose one of these numbers, the panel of three arbitrators, deciding the matter collectively, sided with the Yankees, so Betances' salary was set at $3 million.

If DHBA were in place, there would be only two arbitrators and each of them would have reached his or her decision independently of the other. If the two arbitrators had both sided with the Yankees, the award would still have been $3 million, if both had sided with Betances, the award would have been $5 million, and if the arbitrators had split, the award would have been $4 million.

Although the implementation of DHBA is simple, its accuracy-improving effect is substantial. Let's imagine that in the Betances-Yankees arbitration, for example, there are five approved arbitrators:[8] three of whom would decide in favor of the Yankees—let's call them A, B, and C, and two of whom would decide in favor of Betances—let's call them D and E. Thus, the average award of these five arbitrators is $3.8 million, i.e., the average of three awards of $3 million and two awards of $5 million. Accordingly, if one arbitrator decided this case, the average "error" under this process—defined as the absolute value of the difference between the single arbitrator award and the average award of $3.8 million—is a whopping $960,000.[9]

You improve the accuracy only a bit by following the MLB procedure and using a panel of three arbitrators instead of one arbitrator. There are now ten possible panels: ABC, ABD, ABE, ACD, ACE, ADE, BCD, BCE, BDE, and CDE. If a "majority vote" rule applies, which appears to be how MLB Arbitration is conducted, all but three of these panels (ADE, BDE, and CDE) would decide in favor of the Yankees.[10] Thus, the average error for a three-arbitrator panel, deciding the matter collectively, is $920,000.[11]

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[8] In reality, there is a pool of about 15 arbitrators that are mutually agreed upon by MLB and the Players Association from which the panel of three arbitrators is chosen.

[9] The average error is computed by determining the error of each possible arbitrator (or panel of arbitrators) that could be assigned to the case, and dividing the sum of these errors by the number of possible arbitrator configurations. In this example, since the error of each of Arbitrators A, B, and C is $800,000 ($3.8 million - $3 million) and the error of each of Arbitrators D and E is $1.2 million ($5 million - $3.8 million), the average error is $960,000 ([(3($800,000) + 2($1.2 million)] / 5).

[10] The current MLB Collective Bargaining Agreement provides that the decision of the arbitrators is announced within 24 hours of the hearing and the individual votes of the arbitrators are recorded and revealed to the MLB labor relations department and the Players Association a few weeks later. *See* 2017-2021 Collective Bargaining Agreement, Article VI, Part E(13). Retrieved from http://legacy.baseballprospectus.com/compensation/cots/.

[11] Since the error of each of the seven Yankees panels is $800,000 ($3.8 million - $3 million) and the error of each of the three Betances panels is $1.2 million ($5 million - $3.8 million), the average error is $920,000 ([(7($800,000) + 3($1.2 million)] / 10).

Now compare what happens under DHBA. Here, there are again 10 possible panels: AB, AC, AD, AE, BC, BD, BE, CD, CE, and DE. We can assume that AB, AC and BC would decide in favor of the Yankees, DE would decide in favor of Betances, and the remaining six panels would split. Thus, the average error under this process is $480,000,[12] which is exactly half of the average error when there is a single arbitrator deciding the case and a little more than half of the average error when there is a three-arbitrator panel deciding it collectively.

In short, DHBA increases the odds that the actual award will come close to the average award of the five arbitrators. This, in turn, would make it less risky for Betances to go to a hearing, which would help level the playing field in settlement negotiations.

There is also a more subtle way that DHBA will help the players—by giving them the confidence to submit a number that is closer to an "optimal" number as opposed to a number that maximizes their chances of winning their particular arbitration hearing but is a "loser" in the long run because when they win it is a "single" and not a "home run" (Pauwelyn, 2018). To illustrate this concept, let us assume that a player's salary will be determined by one arbitrator out of a pool of three possible arbitrators, but the parties do not know which of the arbitrators will be assigned to the arbitration. Let us further assume that the player can accurately predict that the team will ask for $1 million, that two of the three arbitrators will determine that the player's "true" value is $1.3 million, and that the third arbitrator (who has a reputation for favoring the players) will determine that the player's "true" value is $2 million. In this case, assuming that numbers have to be submitted in increments of $100,000 and that each arbitrator will pick the number that is closest to its determination of the player's "true" value, the "optimal" number for the player to submit will be $2.9 million, even though the player will "lose" two of the three arbitrations. The three results of the arbitrations will be $1 million, $1 million, and $2.9 million, giving the player an average result of $1.63 million. Here, the "win" is essentially so profitable that it more than makes up for the two "losses." But because the player has less resources than the team and is engaged in only one arbitration compared to the multiple arbitrations the team is engaged in, the player may prefer instead to "play it safe" and submit a number of $1.5 million. This offer will ensure victory in each arbitration and guarantee an award of $1.5 million, even though that is $130,000 less than the average result the optimal number will generate.

There is evidence that the players are indeed "playing it safe" and submitting suboptimal low numbers. The players nominally "won" 18 of the 32 arbitration hearings conducted in 2018 and 2019. However, in fully half of these "wins," the player submitted a number that was either equal to or less than the player's projected salary, as Table 1 shows.

[12] Since the error of each of the three Yankees panels is $800,000 ($3.8 million - $3 million), the error of the one Betances panel is $1.2 million ($5 million - $3.8 million), and the error of each of the six split panels is $200,000 ($4 million - $3.8 million), the average error is $480,000 ([3($800,000) + 1($1.2 million) + 6($200,000)] / 10).

Table 1: *Player "wins" with awards that do not exceed projected salaries, 2018-2019*

Year	Player	Player's Number and Final Award[13]	Projected Salary[14]
2018	Trevor Bauer	$6,525,000	$7,700,000
2018	Justin Bour	$3,400,000	$3,500,000
2018	Avisail Garcia	$6,700,000	$6,700,000
2018	Scooter Gennett	$5,700,000	$6,100,000
2018	Ken Giles	$4,600,000	$5,000,000
2018	Shelby Miller	$4,900,000	$4,900,000
2018	Jake Ordorizzi	$6,300,000	$6,500,000
2018	Jake Wheeler	$1,900,000	$1,900,000
2019	Carlos Correa	$5,000,000	$5,100,000

DHBA should give players the confidence to submit numbers that are closer to optimal because it spreads the risk over two arbitrations. Spreading the risk allows the less-resourced or more risk averse party to compete on a more level playing field with the party that has the deeper pockets and/or the party that is a repeat player. In the example above, for instance, let us assume all the same facts except that two of the arbitrators are now assigned to the case because the parties are using DHBA. If the player now submits the optimal number of $2.9 million, the resulting awards will be $1 million, $1.95 million, and $1.95 million, giving the player the same $1.63 million "average" award, but with less of a disparity among the awards. Because it is now less risky for the player to submit the optimal number, the player is more likely to do so, taking away a "profit center" that the team has under FOA. Indeed, it is for this very reason that some of the most well-resourced poker professionals turn down requests from their less-resourced peers to "Run it Twice"; they understand that their ability to take on risk gives them an advantage that "Running it Twice" reduces (Woods, 2014).

As a final bonus, DHBA would be less expensive for MLB because each hearing would require only two arbitrators instead of three.

[13] *See* Arbitration Tracker for 2018 – MLB Trade Rumors, https://www.mlbtraderumors.com/arbtracker2018 and Arbitration Tracker for 2019 – MLB Trade Rumors, https://www.mlbtraderumors.com/arbtracker2019.

[14] *See* Projected Arbitration Salaries for 2018 – MLB Trade Rumors, https://www.mlbtraderumors.com/2017/10/projected-arbitration-salaries-for-2018.html and Projected Arbitration Salaries for 2019 – MLB Trade Rumors, https://www.mlbtraderumors.com/2018/10/mlb-arbitration-salaries-2019.html.

5. Let's Play Three

As you may be thinking, you do not have to stop with running it just twice. In Triple-Header Baseball Arbitration (THBA), three arbitrators each decides the case independently of the others. If all three agree on a number, then that is the award; but, if the arbitrators split 2-1, the award is set at the applicable two-thirds point between the parties' numbers. Using the earlier Betances-Yankees example once more, we can assume that one of the panels (ABC) would rule unanimously in favor of the Yankees, six of the panels would rule 2-1 in favor of the Yankees (ABD, ABE, ACD, ACE, BCD, and BCE), and three panels would rule 2-1 in favor of Betances (ADE, BDE, and CDE). Thus, the average error is now reduced to $320,000,[15] which is exactly one-third of the average error when there is a single arbitrator deciding the case and a little more than one-third of the average error when there is a three-arbitrator panel deciding it collectively.

In deciding between DHBA and THBA, MLB and the Players Association will need to determine whether the accuracy boost in "Running it Thrice" versus "Running it Twice" is worth the administrative cost of hiring the additional arbitrator. Another difference between DHBA and THBA is that DHBA will lead to hearings that are "ties" while THBA will always have a winner and a loser. Some poker players like to run it three times, as opposed to twice, to avoid ties; however, in the MLB context, ties are probably beneficial for team-player relations.

6. Summary and Conclusion

With the MLB Collective Bargaining Agreement set to expire in 2021, this paper presents a new option to address player concerns about the fairness of MLB Arbitration. DHBA and THBA will substantially lessen the variance and improve the accuracy of the outcomes compared to FOA used in MLB Arbitration, as Table 2 (summarizing the above discussion) illustrates:

Table 2: *Comparison of FOA used in MLB with DHBA and THBA*

	FOA used in MLB	DHBA	THBA
Award Outcomes and Probabilities	$5 million (30%)	$5 million (10%)	$4.33 million (30%)
	--	$4 million (60%)	$3.67 million (60%)
	$3 million (70%)	$3 million (30%)	$3.00 million (10%)
Average "Error"	$920,000	$480,000	$320,000

<u>Assumptions</u>: Team Bid: $3 million; Player Bid: $5 million
Five Possible Arbitrators: A, B, C, D, and E
A, B, and C side with the Team; D and E side with the Player
Error equals the absolute value of the difference between an award and $3.8 million (the average award of the five arbitrators)

[15] Since the error of the one unanimous Yankee panel is $800,000 ($3.8 million - $3 million), the error of each of the six majority Yankees panels is $133,333 ($3.8 million - $3,666,667), and the error of each of the three majority Betances panels is $533,333 ($4,333,333 - $3.8 million), the average error is $320,000 ([1($800,000) + 6($133,333) + 3($533,333)] / 10).

To be sure, it may be a battle for the players to get teams to agree to DHBA or THBA, for the same reason that some of the best poker players refuse to “run it twice" with their less resourced peers. But, as in the game of baseball itself, it is hard to score if you are afraid to swing and miss.

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