

# MASTERSBALL

## 2010 Valuation Methodology Guide

By Todd Zola

### Introduction

Simply stated, fantasy baseball is a game in which you assemble a team of real baseball players whose statistics are used to score and ultimately rank your team. In order to do this effectively, you need to do three things. First, you need to predict the player's performance. Second, you need to crystallize that projected performance into a currency so you can compare how much each player can help you both with respect to other players of the same position as well as across positions. Once the expected performance is quantified, you can go about the business of assembling your championship squad. This essay will focus on the middle aspect, the quantification of performance, perhaps better known as player valuation.

There are a bevy of valuation systems in use to quantify statistics. Why are there multiple? Because there is no definitive right or wrong. There is no precise manner to put a static designation on a fluid entity. There may be better ways, but it follows that if there were truly a correct or even best way, that would be basically universal. Admittedly, in my younger, more naïve days I felt the method I am about to describe was the be-all-end-all and dedicated my life to that crusade. But over the years, I have developed a truer grasp of what it really takes to succeed at this endeavor and have softened my stance. Player values and rankings are a guide, a piece of the puzzle. I much prefer being recognized for my acumen in the third element of the hobby described above, the assembling of your squad than being known as the premier valuation guy in the industry, though that does have its advantages. That said, those of you that favor the popular SGP method are using an inferior process as it is theoretically and mathematically flawed. After all, I did say soften, not completely change my stance.

What you need from a valuation system is a snapshot view of what a player is worth relative to other players. Since this snapshot is composed of several elements, it also helps if you have an idea of what comprises that snapshot. It really helps if you have an understanding of how the snapshot is generated, so you can do some massaging to the system to best make it work for your league and its unique tendencies.

What you do not need is a green light, red light designation of perfectly accurate value. I chalk it up to the maturation process, both as a person and a fantasy gamer, but I honestly feel the focus I put on "proper player valuation" stunted my growth as a player, detracting from my ability to look at the big picture, understanding how to use that piece of information most efficiently.

With all that said, what follows is a description of a valuation process that I believe to be most effective when looking at the aforementioned big picture. It does not presuppose anything in terms of player value. It gives an unbiased snapshot of how each player can help your squad. It is incredibly flexible so it can handle any tweak or alteration you feel necessary. It can account for all aspects of your league's dynamics and does so in a sound philosophical as well as logical manner.

### The Concept

Simply put, value is distributed in proportion to each player's contribution to the overall player pool. If I have \$1000 to pay a crew for doing a job, someone did 50% of the work gets \$500. If someone else did 30%, they get \$300, leaving \$200 for the remaining 20% contribution of the third member.

Of course, valuing players for rotisserie style scoring is more complex as contributions are across multiple scoring categories. The player's contribution in each category is determined, and these are all summed for a total value.

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### Boundaries and Parameters

Even though much of the introduction was designed to drive home the point that ultimately the value assigned should be viewed rather loosely, we still need to treat the system in a static nature. As such, there are several logical boundaries and parameters of a sound valuation method.

Let us begin with what will be referred to as the draft-worthy pool. The draft-worthy pool should be composed of exactly enough players to field a league full of legal rosters, taking into account positional requirements. By means of example, a 12-team league with 14 hitters and 9 pitchers will have a draft-worthy hitting pool numbering 168 players with 108 in the draft-worthy pitching pool. More specifically, if the positional requirements are the standard 2C, 1B, 2B, 3B, SS, CI, MI, 5OF and UT, then there needs to be 24 C, 12 1B, 12 2B, 12 SS, 12 CI, 12 MI, 60 OF and 12 UT in the hitting pool.

Because most rules specify a minimum bid of \$1 on each player, the lowest ranked player of the draft-worthy pool should be worth \$1, with the top-ranked non-drafted player being \$0. An argument can be made this condition should be set upon each position. That is, the worst catcher in the draft-worthy pool be set at \$1, the worst second baseman \$1, etc. Later, the mathematical manner to do this will be detailed.

Values should be assigned in a zero-sum nature. A typical team budget is \$260. That means our 12-team league has \$3120 to spend on the previously discussed 168 hitters and 108 pitchers. The entire \$3120 should be exactly distributed amongst the 276 players comprising the draft-worthy pool.

Because the points earned in each scoring category in most rotisserie league are equal, the money assigned to each should be the same. For example, in leagues that use a \$260 budget with 5 hitting and 5 pitching categories, you should plan on spending \$26 for each. However, as most everyone knows, conventionally, more money is spent on hitting than pitching. Currently, the average 5x5 league spends 69% of its budget on hitters. This drops to 67% in the ever-disappearing 4x4 leagues. This equates to each 5x5 team budgeting \$179.40 (\$35.88 per category) for hitters and \$80.60 (\$16.12 per category) for pitching. In a global sense, a 12 team league distributes \$430.56 per hitting category and \$193.44 per pitching category.

### Replacement Level and the Concept of Useful Stats

We have already established that each player's value is assigned according to the summed percentage contribution across the categories. The number of players with a value of \$1 and greater is dictated by the number of teams in the league and positional requirements while the total amount of money distributed is equal to the number of teams multiplied by the team budget.

All we have left is to determine the player's contribution to each category. This involves employment of a concept that is becoming more and more familiar to the baseball statistical community and is generally referred to as value above replacement. Personally, I prefer to explain it in terms of useful statistics.

In short, I have an issue paying for something I can get for free. Okay, this does not explain my penchant for buying bottled water, but I digress. In fantasy baseball terms, due to the positional restraints of legal lineups, there is a certain level of statistics that everyone has on their roster. If everyone has these, why pay for, ergo, place a value on them? It does not make sense. If you are doing a football pick-'em pool and everyone chooses the same team to win, the result of that game is inconsequential. If the worst catcher on a roster in a fantasy league is projected to hit 5 homers, then everyone in the league has those same 5 homers, so why pay for them? What you want to pay for is that which differentiates you from the rest. I term these "useful statistics". To bring the point home, our system only values these useful stats.

Here is an example I like to use to demonstrate the concept and utility of useful stats. Let us set up a 2-team HR derby league, you and me. We each need a player from Group A and one from Group B. I will give you first pick. Here is the available player pool:

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### GROUP A

Red – projected to hit 45 HR

Blue – projected to hit 40 HR

### GROUP B

Green – projected to hit 25 HR

Yellow – projected to hit 15 HR

So, who do you want? Hopefully Green. Why? If you take Red because he is the best hitter, I will take Green then Blue for a total of 65 HR. You get Red and Yellow for a total of 60 HR and I get to call SCOREBOARD!!!

In reality, here is how the pool should be considered:

### GROUP A

Red – projected to hit 5 HR

Blue – projected to hit 0 HR

### GROUP B

Green – projected to hit 10 HR

Yellow – projected to hit 0 HR

This represents the number of USEFUL homers each batter swats.

At this point, you may be wondering if this is the mathematical manner to deal with positional requirements, that is, what if instead of 2 groups there were 6 and instead of alphabetical designation, there were catcher, first base, second base, etc.? You are very wise, Grasshopper.

This is precisely the manner proper valuation should be conducted and will also result in the worst player in each pool being valued at \$1 as discussed previously. It also explains why 20 homers from a catcher are worth more than 20 homers from a different position. In 2-catcher leagues, the same 20 homers account for more useful homers for the catcher as the amount subtracted from the replacement catcher is smaller than that of the other positions. In mixed leagues 15 or 16 of a catcher's 20 home runs are useful as compared to perhaps only 12 or 13 for the other positions.

While it is easiest to explain the concept of useful stats using a simple home run derby league, the fact there are multiple categories in standard rotisserie formats adds a significant layer of complexity to the process. The manner in which we overcome this issue is to employ a mythical replacement player, who is a composite of the worst players at each position. You cannot fairly single out a particular player as there are many reasons why a player is of low value. He could have a poor batting average but decent counting stats. He could have a poor average and low power, but a lot of steals. His average could be solid but the associated production minimal. The point is, using an individual player to set the replacement level can skew the useful stats as the adjustment could be too much or too little. So instead, we use the aforementioned mythical player who has a mythical stat line representing the average production of the last few replacement level players.

A final point to be made is some draft-worthy players may in fact contribute a negative value in a particular category if their contribution is lower than that of the mythical replacement player in that category.

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### Converting Ratio Stats to Counting Stats

There is one final speed bump that we need to deal with before we are ready to tie it all up. It is straightforward to envision the distribution of value with the categories involving the counting stats such as HR, RBI, runs, SB, wins, saves and K in standard formats. It is a mite trickier with respect to the ratio categories of BA, ERA and WHIP. We need to convert a ratio stat to a counting stat. This exercise is worthy of an essay unto itself so I will just provide the Cliff Note's version and encourage questions on the message forum.

What we do is take the player's ratio and compare it to a baseline ratio, then multiply the difference by at bats or innings pitched to apply a weight. We have empirically determined that the most effective baseline ratio is that of the typical last place team in your league of the category in question.

Since the baseline batting average for hitters is numerically lower than what you expect for a useful hitter, the baseline average is subtracted from the player's average and multiplied by at bats. On the other hand, since a superior ERA and WHIP are numerically lower than the baseline, they are subtracted from the baseline and multiplied by innings. The resulting number is now treated the same as a counting stat.

### Treatment of Middle Infield, Corner Infield and Utility Positions along with Multiple Eligibility Players

The in-depth manner to account for the fact that either a second baseman or shortstop can fill middle infield, a first baseman or third baseman can be slotted at corner and all hitters can fill utility is beyond the scope of this particular essay. For those interested, the explanation is provided in other site material. For the purpose of this essay, let us assume in our model league above the middle infield pool is composed equally of 6 second basemen and 6 shortstops while the corner pool has 6 first basemen and 6 third basemen. We will also assume the utility pool is all outfielders and DH-only. This means the draft-worthy pool will include 24 catchers, 18 at each infield position and 72 outfielders. In your league, the actual spread will be different. We explain how to deal with this in primers explaining the actual usage of the site's CVRC (customizable value and ranking calculator).

As you know doubt are aware, some players carry multiple eligibility. We use the assumption that they will be drafted at the position they enjoy the most value. As such, we designate positions according to the following positional hierarchy:

C > 2B > SS > 3B > 1B > OF

### Putting it All Together

We now have everything necessary components to determine dollar values. We can determine the amount of useful stats each player contributes by subtracting the corresponding replacement level across the positions. Using our model league and considering just home runs, the top 24 catcher useful home runs total, the top 18 homer totals at each infield position and the top 72 outfield homer totals are all summed and represent the total of useful homers for the draft-worthy pool. Value is then assigned according to the percentage of useful homers each player contributes multiplied by the monetary amount assigned for the pool.

By means of example, let us say the pool of homers for the draft-worthy pool is 2000. An outfielder is projected to hit 40 and the replacement at the position is 10. He is thus given credit for 30 useful homers. According to our calculations above, each hitting category is allocated \$430.56. The player's HR\$ is then  $30/2000 \times \$430.56$  or \$6.46. This is done in a similar manner for the other categories and the individual categorical contributions are summed for a final value.

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To emphasize a point discussed previously, let us consider a catcher that is projected to hit the same 40 homers as the outfielder. The difference is the replacement level for catchers is no doubt less than that for outfield, perhaps only 5. This yields 35 useful homers for our catcher, translating to a HR\$ of \$7.53. The same 40 raw homers are worth more coming from a catcher as he contributes more useful homers to the global total.

In the name of full disclosure, there is still some algebraic tweaking necessary as doing replacement in this fashion results in a hitting pool not necessarily composed of exactly 168 players and a pitching pool with precisely 108 hurlers. But the take home lesson is not this adjustment, but the understanding of how we assign player value in a global sense.

### Making the Theoretical Practical

You can now put away your calculator. We are done considering the value calculation as a static entity. While it is true that what has been described is a theoretically logical procedure, it is not an entirely practical means of assigning value in all instances. There is a fine balance between what a player is theoretically worth and the practical amount you need to pay to acquire his services.

The multiple eligibilities of players along with the corner, middle and utility designations cloud the picture. Who is to say every player eligible at both second and outfield are put at second? Doing this alters the number of players in each position's draft-worthy pool, skewing the composition of the replacement player which affects the number of relative useful stats each player contributes. The best way to combat this is to simplify your pool designation. In almost all leagues, the catcher pool needs to remain distinct. But the first basemen and third basemen can be combined into a single corner infield pool. Similarly, second basemen and shortstops can be merged into the middle infield pool. This cuts down the total number of pools from 6 to 4. In addition, since many outfielders and corner infielders have eligibility in both pools, integrating those is perfectly acceptable as well. Now we only have 3 pools to deal with. Finally, partly due to the plethora of multiple eligibility players and the nature of the current player pool in general, in AL and NL only leagues and even some deeper mixed leagues, the replacement level player is so close to the same across all non-catcher positions you can really simplify matter by using only a catcher and non-catcher pool. All you need to do is lump the respective pools together and determine the replacement level player based on that new group.

Another consideration is you may not feel it is practical to assign the same budget to each category. You may want to invest a higher portion to more stable categories. Perhaps this entails devaluing batting average and wins. Perhaps your league's dynamics are such that speed or saves are devalued. You can readily adjust the budget you dedicate to steals or saves. The idea of devaluing speed makes sense from a theoretical aspect as well and is something we first discussed several years ago. Our value system assumes linear distribution of stats within the final standings. However, the reality is the spread between teams is not linear, especially in steals. We have conducted some studies that show you do not need to spend as much money in the steals category to finish at the same point in the category as you do others. We call this category efficiency and adjust our category weights accordingly, shunting some budget from steals to home runs. Why home runs? Site research demonstrates the category league champions fare the best in is homers so it makes sense to help insure success there. In addition, the same studies show winning teams fare the poorest in steals, providing further evidence that it is practical to reduce steals allocation.

### In Summary

As suggested in the introduction, the beauty of our system is it is flexible enough to easily handle these and any other practical alterations. The foundation is rooted by solid theoretical principles which can be modeled mathematically. But there roots are not unmovable. So long as you understand the principles, you can adjust in any manner you deem reasonable to produce the most practical hence useful set of bid guidelines possible. This is true for any size league with any positional requirements and any scoring categories. It can be

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adapted to keeper leagues. There is not a format we cannot handle. The key is understanding exactly what the value generated represents. It is not an (incorrect) measure of how many points you can gain in the standings with that player. It is not a measure of how many standard deviations a player is from an average player. It is the summed total of each player's contribution of useful stats across each scoring category. We firmly believe this provides you with the optimal guidance to assist in your endeavor to assemble a championship team.

To conclude this essay, we will provide instructions and tips for use of the CVRC. You will be able to enact all of the aforementioned tweaks to the standard value system. As alluded to, we already include some such as altering category weights and streamlining the player pool. Please feel free to ask questions, express concerns or just comment in general in the Mastersball.com content section of the message forums.