HAVERFORD COLLEGE

The Value of Major League Baseball Players

An Empirical Analysis of the Baseball Labor Market

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The goal of this thesis was to test the efficiency of the baseball labor market. To analyze the market, I found models to estimate the marginal revenue products of Major League Baseball players. I then compared the estimated marginal revenue products to the actual terms of players' contracts in the 2009 season. Through this analysis, I was able to find the most over and undervalued players in the 2009 Major League Baseball season. I also was able to identify certain skills that were over or undervalued by the labor market. I noticed considerable differences in market strategy between teams with high payrolls and teams with low payrolls. I was also able to find that players who played above average defense were consistently undervalued.

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I. Introduction

The intense speculation into the efficiency of the baseball labor market reached a peak with the central claim of the 2004 book *Moneyball*. In this book, Michael Lewis asserts that Oakland Athletics' general manager is able to consistently compete with teams with much bigger budgets because the baseball market systematically overvalues certain statistics and undervalues others. While many baseball "insiders" scoffed at this notion, assuming that the authors who used evidence based on math and statistics could never understand the game in the same way and with the same depth as them, a strange thing began to occur. The specific inefficiency pointed out in *Moneyball*, which is that teams were overvaluing batting average and undervaluing on-base percentage, started to be corrected. Teams began looking at new and different statistics in order to try to gain a competitive advantage over others. With no salary cap and a growing disparity between the payrolls of the "haves" and "have nots" in Major League Baseball, the value of information that could give a team a competitive advantage is at an all time high.

The objective of my thesis is to empirically investigate the efficiency of the baseball labor market. In theory, there are many different ways to accomplish this, but I will focus on finding whether players are paid in line with their marginal revenue products. In an efficient market, players would be paid equal to their marginal revenue product. By doing this, I hope to first find the players who are most over/underpaid in Major League Baseball. Second, I hope to find some trends in my results, such as that young players are consistently underpaid or superstars are consistently overpaid. The last thing I hope to find in my results is whether certain skills are systematically undervalued in the baseball labor market. For example, if I find that players who play above average defense are consistently underpaid, I could make the conclusion that the market is undervaluing defense.

In completing this thesis, I hope to improve on the work of economists before me. By tweaking their models to use more advanced and current statistics, I will add existing work and hopefully add to the debate on the efficiency of the baseball labor market.

II. Literature Review

I. *Baseball Between the Numbers: Is Alex Rodriguez Overpaid*

By Nate Silver (2006)

In the book *Baseball Between the Numbers*, author Nate Silver looks at the financials released for Major League Baseball in order to determine whether the players earning the most money are being under or over-valued.

The article first discusses the difficulty in determining the value of a win for each baseball team because each team is not required to submit this information to the public. There was one exception to this rule, the Cleveland Indians, who released some of their financial data in public offerings in both 1998 and 2000. The Indians reported that they received income from eight primary sources: ticket sales, local radio and television, merchandise sales, Major League Baseball Central Fund, concessions and catering, postseason revenue, private suite and club seat rental, and revenue sharing. Of these variables, Cleveland was able to directly affect seven of them by their play on the field. Silver then goes on to describe these variables in greater detail.

Ticket Sales

Using data for ticket sales, Silver ran a regression and found that seven variables had a statistically significant effect on attendance revenue. These variables are, in declining order of statistical significance are: stadium quality rating, market size, honeymoon effect, games won in the previous season, playoff appearances in the past ten years, games won in the current season, and per-capita income. The honeymoon effect is the phenomenon that occurs when a team builds a new stadium and it experiences an increase in attendance. The honeymoon effect is said to last around three seasons. In his regression,

Silver found that stadium quality was the most statistically significant variable in determining ticket sales, as a team receiving an 85 on the ESPN grading scale can expect, on average, about $19 million more gate receipts than one receiving a 60. The honeymoon effect was found to increase a team's revenue by about $17 million over the first three years of a stadium's existence. Market size was also found to make a significant impact on ticket sales, as the biggest market, belonging to the New York Yankees, was found to make about $28.5 million in additional ticket sales than the smallest market, belonging to the Kansas City Royals. While per-capita-income was statistically significant at the 90% level, it did not make a large different in the amount of ticket sales. The wealthiest market, belonging to San Francisco and Oakland, was found to produce only $7 million in additional ticket sales when compared to the least wealthy market, belonging to Tampa Bay. Some of the most important determinants in ticket sales were the team quality measures, which were games won in the previous season, playoff appearances in the past ten years, and games won in the current season. This model found that winning an additional game accounted for about $700,000 in added gate receipts, with $300,000 of it being accounted for in the current season and $400,000 in the season that immediately follows. Also, this model found that a team gains about $1.9 million in additional ticket revenue per season for each playoff appearance in the past ten seasons, meaning that an additional playoff appearance is worth about $14.9 million in present value.

In this model, Silver takes playoff appearances out of consideration and out of the regression equation. Therefore, the value of a regular season win increases because now the win does not only represent the value of a regular season win, but also the implied value of the improved probability of making the postseason. From this assumption, Silver's model found that a regular season win is worth about $880,000 in gate receipts.

Concessions

Concessions revenue consists mostly of food, alcoholic and nonalcoholic beverages, and parking. In Silver's model, he treats them as a multiplier on gate receipts, meaning that for every X dollars spent on tickets, a person will spend Y dollars on concessions. For the 1996 and 1997 seasons, the Cleveland Indians reported an average of $14.4 million in concessions and an average of $47.5 million in ticket sales. Based on these numbers, Silver estimates that concessions generate about 30% of the value of ticket sales. The problem with this is that it is working with data only from one team. In order to make sure that this number was valid, Silver compared it with the concessions multiplier for Loews Cineplex, which also had a multiplier of around 30% for its concessions. Therefore, in Silver's model, each additional win is worth about $267,000 in concessions revenue.

Luxury Suites and Club Seats

Luxury suites and club seats have become a staple of the modern baseball stadium, as they are highly priced and are usually rented out by corporations or wealthy individuals. According to the Cleveland Indians' financial disclosures between 1996 and 1997, the team reported an average of $7.9 million in luxury suites and club seat revenue per season. This is compared to an average of $47.5 million in gate receipts, which is a ratio of about 16.5%. Silver also found data available on luxury suites and club seats on sportsvenues.com. This site reports that the average MLB stadium had 77 luxury suites with a median price of $133,829, and 3,983 club seats with a median price of $3,985. This implies that luxury suites account for a revenue of about $10 million per team and club seats account for $16 million in revenue per season. When comparing the SportsVenues data indicating that luxury and club sales account for about $26 million in revenue per season compared to an average of $52 million in total gate receipts, a ratio of about 50%, to the Cleveland Indians data which suggested a ratio of 16.5%, Silver noticed the obvious disconnect. To resolve this discrepancy, he explained that because luxury suites and club seats are a relatively new phenomenon, the amount of these seats has probably grown. To resolve this problem, he split the difference between the two sets of data to come up with a 33% ratio between

luxury/club revenue and regular attendance revenue. Silver then went on to note that this model still did not take into account how responsive luxury and club seat sales are to changes in team quality. Silver suggests the multiplier should be reduced by one third to account for these factors. In other words, for every $1.00 that a team receives in additional gate receipts as a result of an improvement in team quality, it will also receive an additional $.22 in luxury/club seat revenue. Therefore, on average, one additional win is worth an additional $196,000 in additional luxury suite and club seat revenue.

Postseason

In the 2001 financials that Major League Baseball presented to Congress, it was found that its teams received $45 million in postseason revenue in a postseason, during which 35 games were played. This means that each postseason game was worth 1.3 million in additional revenue to each home team. To find out how much revenue each playoff team received for making it, Silver first had to find out how many home games an average postseason team gets to play. He found that since 1995, the inception of the current Wild Card system, there has been an average of 33 postseason games per season. Dividing this number by the eight teams that make the playoffs, he found that each team averaged 4.1 home games per postseason, which works out to about $5.8 million in additional revenue for making the postseason. Because Silver is running a linear regression that does not differentiate between regular season wins and postseason appearances, he had to find a way to add the value of making the postseason into a regular season win. To do this, he ran a regression of regular season wins on playoff appearances, and found that each win is worth about one fortieth of a playoff appearance. The amount of wins that a baseball team usually incurs ranges between 60 and 100 wins, with a team that wins 60 or fewer games guaranteed not to make the playoffs and a team that wins 100 wins virtually guaranteed. By dividing $5.8 million by 40, Silver found that each additional regular season win was worth about $154,000 dollars in the increased probability that a team makes a postseason appearance.

Merchandise

The establishment of Major League Baseball Properties in 1966, which made the MLB responsible for marketing team-branded merchandise on a national level and distributed the income from these sales equitably among the thirty teams, removed most of the revenue possibilities in the merchandise arena for many teams. However, teams are still permitted to operate retail stores within a two-hundred mile radius of their home field. The data that the Indians submitted in 1996 and 1997 showed that they received an average of $4 million in revenue, which is about an 8% ratio of total gate receipts. Because the majority of these sales take place within the ballpark itself, this number acts as a multiplier on gate receipts, just as concessions did. Using the Indians' eight percent multiplier on gate receipts, each additional win is worth about $70,000 in merchandise revenue.

Local Media

Outside of ticket sales, local media is the most important source of revenue for a Major League Baseball team. Using data found in *Broadcasting & Cable* magazine, Silver was able to run a regression on local media revenues. He initially used seven independent variables in the regression analysis: average number of games won in the previous three seasons, playoff appearance in the previous season, number of winning seasons in the past ten years, number of playoff appearances in the past ten years, market size, per-capita income, and superstation dummy. The superstation dummy is a dummy variable created to reflect teams such as the Chicago Cubs and Atlanta Braves, which each own their own national television station (WGN and TBS) and broadcast their games nationally. This means that each of these teams can expect to receive more media revenue than a normal team only broadcasting locally. This regression found that the majority of differences in media revenue were explained by three variables, market size, postseason appearances in the past ten years, and the superstation dummy. The superstation dummy says that the Cubs and Braves make about $35 million in extra revenue when compared to other teams. Market size was also found to be a highly significant predictor of local media revenue, with the difference between the largest and the smallest market, New York and Kansas City, at

about $30 million. This model also found that playoff appearances in the past ten years were a large factor in local media revenue. One additional playoff appearance was found to increase media rights fees by $1.8 million per season for each of the next ten seasons, equalling about $14 million in present day value. Each of the variables dealing with number of games won were found to be insignificant when including the playoff variable. Because Silver's linear model was limited to number of games won, and even when the playoff variable is removed the number of wins variable does not become statistically significant in its place. The regression finds that each additional win is worth about $244,000 in additional local broadcast revenue.

Revenue Sharing

Under the current Collective Bargaining Agreement, teams must provide 34% of their locally earned revenue to a central fund that redistributes this revenue equally among the thirty MLB teams. In practice, teams earning more than average local revenue lose money and teams earning lower than average revenue gain money. This "split pool" system causes the tax rate on revenue generated by poorer clubs to be higher than for richer ones. The economist Andrew Zimmerman estimated that in 2005, the Yankees will contribute 39% of their locally generated revenue, while the Royals will contribute 47%. Using the average of these, Silver says that the average team contributes 43% of its locally generated revenue to Major League Baseball. By simply subtracting 43% off the total revenue created from an additional win, $1,812,000, Silver found that the average win costs a team $779,000 in additional revenue.

Linear Model

1 additional win= $880,000 gate receipts + $267,000 concessions + $196,000 luxury/club seats +$154,000 postseason revenue + $70,000 merchandise +244,000 local media - $779,000 revenue sharing = *1,032,840 revenue*

Two Tiered Model

Relaxing the assumption that there is a linear relationship between team wins and local revenue, Silver decided to make a model that took into account both regular season wins and playoff wins. The model is specified as follows:

Revenue Category	Additional Regular Season Win	Additional Playoff Appearance
Regular season gate receipts	$705,000	$14,869,000
Concessions	$214,000	$4,514,000
Luxury suites and club seats	$157,000	$3,314,000
Postseason gate receipts	$0	$5,797,000
Merchandise	$56,000	$1,182,000
Local broadcast rights	$0	$14,093,000
Revenue sharing payments (34%)	($385,000)	($14,881,000)
Total	**$747,000**	**$28,887,000**

The problem with this model is that it is more useful for looking backwards then looking forwards. Coupling this model with a logistic regression analysis of the probability of making the playoffs, it can allow us to deduce the marginal economic value of one additional win.

II. ***Are Baseball Players Paid Their Marginal Revenue Products?***

Don N. MacDonald and Morgan O. Reynolds

***Managerial and Decision Economics*, Vol. 15, No. 5, Special Issue: The Economics of Sports Enterprises (Sep.-Oct., 1994) pp. 443-457**

This paper examines Major League Baseball since the implementation of free agency (specifically the 1986 and 1987 seasons) to see if players are paid in line with their marginal revenue products. The paper first dives into research done by Scully in 1974 that states that baseball players were only being paid 10-20% of their marginal revenue product in the 1968-69 season, 30-50% of their marginal revenue product in the 1976 season, and close to 100% of their marginal revenue product as recent as 1994. The authors then go on to say that the purpose of their study is to examine whether the free agency and salary arbitration policies have brought player salaries more in line with their marginal revenue products.

Winning Percentage and Revenue Models

MacDonald and Reynolds go on to describe a brief history of labor laws in Major League baseball. After this description, they start to explore the MRP (marginal revenue product) of different players by first examining the baseball production function. In this function:

$$WP = a_0 + a_1RUNS + a_2ERA + a_3CONT + a_4OUT + e_1 \text{ (equation 1)}$$

Where WP is the percentage of games won by a team in a single season times 1000, RUNS is the total number of runs scored for a season, ERA is the teams earned run average per 9-inning game, CONT is a dummy variable that is 1 if the team finished within five games of first place of the division and 0 otherwise, OUT is a dummy variable that is 1 if a team finishes 20 games or more out of the division lead or 0 otherwise, and e is the error term. After introducing a team's win model, the pair of authors introduce their model for team revenue, which they see as a linear function of five variables: winning percentage, population, personal income, a dummy variable for whether a team is above or below .500,and finally a dummy variable for whether there is another team in the same metropolitan area (ex. New York and Chicago). Written in regression form:

$$REV = b_0 + b_1WP + b_2POP + b_3Y + b_4LOSER + b_5TT + e_2 \text{ (equation 2).}$$

Simple regression is not effective for determining the second equation given above. By using the 2SLS method for the 1986-1987 data, MacDonald and Reynolds were able to create the following model:

WP=461.42 + .53 RUNS – 86.37 ERA + 22.42 CONT – 20.03 OUT with an R2 of .86

and

REV= 7.56 + .027WP – 9.63POP +.75Y -8.53 LOSER -4.69TT with an R2 of .75.

All coefficients in both regressions are statistically significant.

MRP Models

From these equations, the authors derive the MRPs of both hitters and pitchers. From equation 1, the authors claim that each run scored raises a team's winning percentage by .5343, which leads to a $27,217 increase in revenue. Therefore the MRP for a hitter is equal to: MRP_{hitter}= .534 x $27,217 x mean annual runs scored= $14,534 x mean annual runs scored. For pitchers, the authors found that a one point decline in ERA raises winning percentage by 86.37. However, because ERA is a weighted average by each pitcher's share of team innings pitched (IP%), they had to multiply the ERA productivity function by the percentage of innings pitched. The result was the following model: $MRP_{pitcher}$=($12,558,468 x IP%) + ($2,350,732 x IP%)ERA.

In order to determine whether players were being paid according to their marginal revenue products, a regression of individual salaries on estimated MRP's should accept the joint hypothesis that the intercept equals zero and the slope equals one. Using this method, the authors found that they were not able to reject the hypothesis that MLB players are paid approximately in accordance with MRP.

Conclusions

The conclusions that MacDonald and Reynolds were able to draw from their research found that young players are generally paid below their MRP and experienced players are paid in line with their MRP. There are several different reasons for this, the main one being that young players are not

eligible for free agency until they have completed six years of MLB service, meaning that they are basically tied to their team for these six years. Another finding of MacDonald and Reynolds is that senior pitchers are overpaid relative to their MRP. One of the reasons for this is that MRP for pitchers is determined by multiplying team ERA by the percentage of that team's innings that a pitcher threw in, which is going to decrease as a pitcher increases in age.

III. Salary Evaluation for Professional Baseball Players

James R. Lackritz

***The American Statistician*, Vol. 44, No. 1 (Feb., 1990) pp. 4-8**

The purpose of this study was to measure the impact of an individual player's statistics on the revenues generated by a team. Since the onset of the free agent market in 1976, player's salaries have risen dramatically, from the point where the average player was making about $50,000 in 1976 to about $450,000 in 1986. Because of this meteoric rise in player salaries, the author says it makes sense to produce a mathematical algorithm to establish a player's worth to his individual team.

Lackritz builds upon a past model by Ross (1985) where he found a player's financial worth through a three step model. The model is specified as follows: Revenue=f(attendance, broadcast revenues, concessions), Attendance= f(team/city financial variables, winning percentage, last year's winning percentage, last year's attendance, number of superstars, years since most recent pennant), and Winning percentage= f(offensive/defensive/pitching variables). The author notes that this model is sound in theory, but is difficult to apply given the lack of data available on both broadcast rights and souvenir earnings.

Home Attendance Model

Lackritz was specified a model on the factors affecting home attendance in both leagues. The variables which affected home attendance were PCT (the percentage of games won), LPCT (last year's percentage of games won), SPTSCOMP (the number of competing sports teams), DOMED (dummy variable equaling 1 if the stadium is domed or in a warm-weather city and 0 otherwise), PENWIN (another dummy variable equaling 1 if the most recent pennant was won in the last five years and 0 otherwise), and STARS (the number of acknowledged superstars on the team). Overall, his findings for both leagues is: Home Attendance= -2,974,891 + 5,104,534 PCT + 196,438 SPTSCOMP + 2,374,386 LPCT + 227,014 DOMED + 259,072 PENWIN + 123,709 STARS.

Winning Percentage Model

After finding the model for home attendance in both leagues, Lackritz creates a model for winning percentage in both leagues. In the American League, he found that winning percentage was statistically significant when it included the following variables earned runs per innings pitched (ERIP), offensive average, which equals (total bases + walks + hit by pitch)/ (total at bats + walks) (OA), fielding percentage (FIELD), on-base percentage (OBP), the ratio of strikeouts to base on balls (SOBB), and the number of saves divided by the number of wins (SVW). For the national league, he found that the winning percentage model was determined by the variables ERIP, OA, FIELD, OBP, and hits per innings pitched (HIP).

The difference in which variables are statistically significant across leagues is a result of the different style in play in each league. The American League is allowed to use a designated hitter for the pitcher, resulting in a style of play that leads to more runs scored. The National League is known for playing a style conducive of lower scoring games.

Player Valuation Model

After creating the models for winning percentage and home attendance, Lackritz continues evaluating a player's impact on a team's winning percentage. He proposes that the best way to do this is to compare each player with an "average" player in the league. He does this by comparing each player's statistics against a base average statistic by either the league or his teammates. The difference between these two would be multiplied by a utilization function to estimate the player's value. Lackritz develops the utilization function as a player's total at bats, fielding chances, or innings pitched, divided by his team's totals. Lackritz finds the estimated net worth for a player by subtracting that players specific statistic from the league average statistic. For example, Barry Bonds had a fielding percentage of .99 and if the league average was .98, the difference would be .01. He then multiplies this number by the coefficient found in the winning percentage regression and by a number representing the utilization of that player. By doing this, he finds the net effect on percentage of each individual statistic. After this, he adds up all the statistics to find the total net effect on net percentage. After computing this number, he multiplies it by 25,000,000 and then adds a base salary, calculated by how much a player plays plus a bonus according to their final impact on a team's percentage. The result of this is a player's estimated net worth.

IV. *An Economic Evaluation of the Moneyball Hypothesis*

John K. Hakes and Raymond D. Sauer

***Journal of Economic Perspectives*, Vol. 20, No. 3 (Summer 2006) pp. 173-186**

When the 2004 book *Moneyball* hit the shelves, it triggered outrage among baseball purists everywhere by introducing the idea that the baseball labor market was highly inefficient. In this paper, Hakes and Sauer test Lewis' (2004) argument with basic economic tools to confirm or deny his claims. In the end, the authors end up finding that Lewis was correct in pointing out the inefficiencies in the baseball labor market. The authors find that even though many people were quick to dismiss Lewis and

Oakland Athletics general manager as frauds who were simply trying to grab the spotlight, the market started to adjust to the point that the inefficiencies that existed at the time of the publication of *Moneyball* no longer exist in the market today.

Batting Statistics

For years, the most common measure of batting skill was batting average, which is simply a player's hits divided by his total at bats. The problem with this statistic is that it weights singles and home runs the same, so it ignores the productivity of hits that garner more than a single base. A much better statistic to measure hitters is slugging percentage, which is total bases divided by at bats. In this statistic, home runs are worth four times as much as singles and doubles half as much as home runs. While slugging percentage is a better statistic than batting average, it still fails to take into account the fact that a walk and a single are essentially the same thing. This is where on base percentage comes into play. On base percentage is simply the fraction of plate appearances in which a player reached base successfully through a hit or a walk. By running a linear regression with winning percentage as the dependant variable, the authors find that on-base percentage is a strong indicator for how much a batter contributes to winning a game. In this regression, it is shown that a one point increase in on-base percentage has a much larger effect on a team's winning percentage than a one point increase in slugging percentage.

Conclusions

Overall, the authors found that baseball labor market was inefficient during the early 2000's. Teams failed to recognize the importance of on-base percentage, and the result was players with high on-base percentages and league-average batting averages were available at a reduced price. The Oakland Athletics were able to exploit this inefficiency and win many games, despite operating at one of the lowest payrolls in the league.

III. Data

The team data that I use in my model comes from several sources. I found data on team winning percentage on espn.com. Data on a team's runs scored, fielding independent pitching (FIP), ultimate zone rating (UZR), and innings pitched was acquired through fangraphs.com. Forbes.com provided team revenue data. Thesportmarket.tv/franchises/mlb provided data on market size, income per capita, television ratings, and gate receipts.

For individual player data, I used fangraphs.com to find plays, UZR, FIP, runs scored, and innings pitched. An individual was only eligible for my data set if he had at least 400 plate appearances and 800 innings in the field. An exception was made for American League hitters without 800 innings in the field who primarily played designated hitter. A full list of variables and explanations of the variables are available in the appendix.[1]

For players who registered UZR at multiple positions, I took a weighted average of their UZR at all of their positions in order to find their total UZR. Additionally, for pitchers who spent time pitching on two teams, I found the percent of total innings they threw for both teams and took a weighted average based on how much they played for each team.

IV. Model

Winning Percentage Model

The model that I will use to estimate a player's marginal revenue product will employ three steps. The first step is to create a model to estimate a team's winning percentage. This model will be based on the one set forth by MacDonald and Reynolds with a few slight changes. First, instead of using earned run average (ERA), a statistic that is difficult to trust because the differences in defensive ability from team to team, I will use fielding independent pitching (FIP). The logic behind using FIP instead of ERA is

[1] Appendix

that FIP evaluates a pitcher based on only things that he can control (home runs, walks, and strikeouts). In doing this, FIP evaluates a player's true abilities and judges him based on these factors.[2]

The second way in this model differs from MacDonald and Reynolds' is that it includes a measure for defensive performance, UZR. The MacDonald and Reynolds model did not include any measure for defensive performance. Excluding measures for defensive performance can lead to overvaluing players who are only exceptional in one facet of the game, such as hitting. I chose UZR over traditional defensive statistics such as fielding percentage because UZR includes range factors that fielding percentage does not. For example, a player with exceptional range at shortstop gives himself the opportunity to make more errors than a player with average range. Fielding percentage could show that the player with less range is the better defensive player when in reality, that is false.

The variables that remain constant between the models are $RUNS_t$, CONT, and OUT. I chose to keep $RUNS_t$ as the measure of offensive performance because the amount of runs a team scores is the best indicator of how many wins that team will have.[3] CONT and OUT are also good variables for this model because they explain how record can affect how a team plays throughout the course of a season. For example, a team that is a contender, defined as finishing within five games of the division lead in this model, will probably be trying as hard as possible to win for the entire year. On the other hand, a team that is out, defined as finishing twenty or more games out of first place in this model, could use the season to evaluate some of its minor league talent and even trade away some of its better players for prospects.

In summary, the model for estimating winning percentage will be:

$$\mathbf{WP = a_0 + a_1RUNS_t + a_2FIP_t + a_3CONT + a_4OUT + a_5UZR}$$

[2] http://www.fangraphs.com/blogs/index.php/pitcher-win-values-explained-part-two
[3] http://www.baseballprospectus.com/article.php?articleid=342

Revenue Model

The second model I will use to estimate a player's marginal revenue product will be one that estimates a team's revenue by examining different on-the-field and off-the-field variables. This model will be based on the research of MacDonald and Reynolds (1994) and Silver (2006). The MacDonald and Reynolds model estimated team revenue as a function of winning percentage, population, income per capita, whether they won more than 50% of their games, and whether there are two teams in their market. Silver estimated team revenue as a function of gate receipts, concessions, luxury and club seats, postseason revenue, merchandise, local media, and revenue sharing.

Through a process of trial and error, I was able to come up with a revenue model based on winning percentage, market size, a "superstation" dummy, which describes whether a team owns its own television station or not, and television ratings for local media broadcasts. The first choice I had to make when creating this model was choosing between winning percentage and gate receipts as a variable, as including gate receipts caused winning percentage to become statistically insignificant. Because determining the marginal revenue products of players is predicated upon knowing the effect of winning percentage on revenue, I had to eliminate gate receipts as a variable.

The second and third variables, market size and the "superstation" dummy, are both important factors in estimating a team's revenue. Market size tells us the amount of people who are available to attend and watch baseball games on a regular basis. The "superstation" dummy is in place for the relatively new phenomena of teams owning their own television stations. The phenomena started in the mid 1990's when the Atlanta Braves' owner Ted Turner had all of his team's games broadcast nationally and has led to the creation of other "superstations" around Major League Baseball. The reason that these "superstations" are important within the context of the model is that they bring in much greater revenue than the average Major League television contract. As a result, teams that own their own television station bring in greater revenue than teams who do not.

The fourth variable in this model, television ratings, was the most difficult one to choose. The idea behind this last variable is to reflect the popularity of a team within its market. The popularity measure proposed by MacDonald and Reynolds (whether a team was above or below .500), was statistically insignificant, and the popularity measures proposed by Silver (concessions revenue, luxury and club seats revenue, and merchandise revenue), all had data that was difficult or impossible to find. I chose television ratings because I felt it to be an accurate representation of how popularity affects a team's revenue. For example, the Milwaukee Brewers, a team that plays in the smallest market, does not own its own television station, and is a perennial loser, is able to garner respectable revenue of $173 million in 2009 because the team is extremely popular in its area. Milwaukee ranks number three in television ratings with a 7.47.[4]

The model for a team's revenue will be:

$REV = b_0 + b_1WP + b_2POP + b_3TV + b_4RATING$

It is interesting to note that this model found income per capita, a mainstay of prior researchers' team revenue models, to be statistically insignificant. There could be several reasons for this. The first is that this model only takes into account data from the 2009 season, meaning that this could simply be that the sample size is too small to correctly show the effect of income per capita on team revenue. A second reason could be that the data used for income per capita in this model was income per capita in the greater metro area of the market rather than just the city. This had a profound impact on certain cities. For example, Atlanta as a city has an income per capita of $25,254, good for seventh in Major League Baseball, but the Atlanta metro area has an income per capita of $ 37,294, which ranks 27th, or third from last, in Major League Baseball. [5] Other cities, such as Baltimore, experience the opposite

[4] Appendix
[5] http://www.thesportmarket.tv/franchises/mlb_atlanta_braves.htm

effect, ranking near the bottom of city income per capita and near the top of metro.[6] The last reason that income per capita could be insignificant could be what Silver found in modeling gate receipts, the main component of most teams revenue. Silver found that even though income per capita was statistically significant in his model, it had a small impact on ticket sales, with only a seven million dollar gap between the smallest and biggest markets.[7] Overall, team quality is much more important in ticket sales than any other variable.

Marginal Revenue Products for Pitchers and Position Players

From the models for team winning percentage and team ticket sales, I can derive the marginal revenue products for both position players and pitchers by finding out how much their individual statistics affected winning percentage and how that winning percentage affected revenue. For position players, marginal revenue product will be equal to:

$$\mathbf{MRP_{Position\ Player} = (a_1 * b_1 * RUNS_p) + (a_5 * b_1 * UZR_p)}$$

In this model, the position player's defense and offense is evaluated by multiplying the amount of runs that player scored and that player's UZR by the corresponding coefficients. This shows the effect that a certain player had on a team's winning percentage. By multiplying the player's effect on winning percentage in each category by the coefficient for wins in the revenue model, the position player's marginal revenue product is found.

The idea behind finding the marginal revenue for pitchers is the same as for position players. Marginal revenue product for pitchers is equal to:

$$\mathbf{MRP_{Pitcher} = (b_1 * (a_0 - a_2 FIP_p))*\%IP}$$

[6] City per capita personal income: $16,978 (#26 MLB) Metro area per capita income: $45,208 USD (#12 MLB)
[7] Silver (2006)

This model functions by finding how a player's FIP affects team winning percentage. The model does this by subtracting the constant from the first equation by the FIP coefficient multiplied by a player's FIP. To determine how this affects revenue, the model then multiplies this number by the coefficient on winning percentage from the revenue model. To finish, the model multiplies this number by the percentage of innings that a player pitched in order to find his marginal revenue product.

V. Results

Completed Models

$WP=538.049 + .3705702RUNS_t - 71.52405FIP_t + 36.02232CONT - 51.22421OUT + .4883638UZR_t$

$REV= 37.5356 + .1585116WP + 6.085343POP + 27.53062TV + 7.808715RATING$

$MRP_{positionplayers}= .371 * .159 *RUNS_p + .488 *.159*UZR_p$

$MRP_{pitchers}= (.158 * (538.049 – 71.52*FIP_p)) * \%IP$[8]

Interpretation

The model for winning percentage has an R^2 of 0.896 and all coefficients are statistically significant at the two percent level. This model returned everything that I would expect, with winning percentage being affected positively by runs scored, contending, and UZR, and negatively by high FIPs and being twenty or more games out of first place.

The model for revenue has an R^2 of 0.808 and all coefficients are statistically significant at the six percent level. While nothing is absolutely shocking in this model, as each variable positively affects team revenue, there are a couple interesting things to note. First, winning percentage looks like it has a miniscule effect on revenue in this model. The reason for this is that my data set has winning percentage

[8] Appendix Regressions

multiplied by one thousand in order to better measure the effect of small changes in winning percentage on revenue. Another thing to notice is the tremendous impact of a team owning its own television station on revenue. Teams that own their own networks, all other things equal, make $27.5 million dollars more in revenue than teams that do not.

The Top Ten Undervalued Position Players

Name	Team	R	MRP *1000000	Actual Contract (2009)	Over/Under Valued
Franklin Gutierrez	Mariners	85	7,392,623.55	$455,000	6,937,623.55
Evan Longoria	Rays	100	7,275,112.56	$550,000	6,725,112.56
Michael Bourn	Astros	97	6,448,638.38	$434,500	6,014,138.38
Ben Zobrist	Rays	91	6,263,504.28	$415,900	5,847,604.28
Dustin Pedroia	Red Sox	115	7,335,647.62	$1,750,000	5,585,647.62
Matt Kemp	Dodgers	97	5,937,723.62	$467,000	5,470,723.62
Denard Span	Twins	97	5,631,317.99	$435,000	5,196,317.99
Justin Upton	Diamondbacks	84	5,592,129.01	$412,000	5,180,129.01
Nyjer Morgan	- - -	74	5,431,418.87	$411,500	5,019,918.87
Hunter Pence	Astros	76	5,431,856.92	$439,000	4,992,856.92
Troy Tulowitzki	Rockies	101	5,963,671.74	$1,000,000	4,963,671.74
Yunel Escobar	Braves	89	5,351,689.23	$425,000	4,926,689.23
Mark Reynolds	Diamondbacks	98	5,299,761.35	$422,500	4,877,261.35
Elvis Andrus	Rangers	72	5,227,862.75	$400,000	4,827,862.75
Nelson Cruz	Rangers	75	5,171,847.79	$408,070	4,763,777.79
Ryan Theriot	Cubs	81	5,245,605.06	$500,000	4,745,605.06
B.J. Upton	Rays	79	5,166,831.38	$435,000	4,731,831.38
Marco Scutaro	Blue Jays	100	5,750,109.41	$1,100,000	4,650,109.41
Kendry Morales	Angels	86	5,686,384.96	$1,100,000	4,586,384.96
Ryan Braun	Brewers	113	5,615,753.79	$1,032,500	4,583,253.79
Colby Rasmus	Cardinals	72	4,925,958.57	$400,000	4,525,958.57

The table above shows the twenty position players who are most underpaid in baseball according to my model. While this table generates some positive results, it highly favors pre-arbitration players. Major league baseball draft laws state that any player that signs a contract after being drafted is not

eligible for free agency until he has completed at least six years of Major League service. Also, a player is not eligible for salary arbitration until he has at least three years of Major League service. This chart shows the result of these policies. Major League teams are able to get years of service from young players at a minimal cost. Because these policies skew the data towards players not yet eligible for salary arbitration, it is more beneficial to look at the top ten most undervalued players who have already qualified for arbitration or been given a contract.

Name	Team	MRP *1000000	Actual Contract (2009)	Over/Under Valued
1. Evan Longoria	Rays	7,275,112.56	$550,000	6,725,112.56
2. Dustin Pedroia	Red Sox	7,335,647.62	$1,750,000	5,585,647.62
3. Troy Tulowitzki	Rockies	5,963,671.74	$1,000,000	4,963,671.74
4. Ryan Theriot	Cubs	5,245,605.06	$500,000	4,745,605.06
5. Marco Scutaro	Blue Jays	5,750,109.41	$1,100,000	4,650,109.41
6. Kendry Morales	Angels	5,686,384.96	$1,100,000	4,586,384.96
7. Ryan Braun	Brewers	5,615,753.79	$1,032,500	4,583,253.79
8. Ryan Zimmerman	Nationals	7,475,452.67	$3,325,000	4,150,452.67
9. Jayson Werth	Phillies	6,329,332.00	$2,500,000	3,829,332.00
10. Ian Kinsler	Rangers	6,776,490.67	$3,200,000	3,576,490.67

While this table results in seeing more household names, there are still some names that would surprise some people, namely Ryan Theriot and Marco Scutaro. These players might not strike fear into opposing pitchers, but they did not sneak into this group. Each of them posted seasons where their MRP was over a million dollars better than the average contract of 4,239,264.62.[9] Both of these players were able to crack this list in different ways. Although Theriot had the lowest marginal revenue product of any player in this group, he was able to post a solid season by turning in a slightly above average 81 runs[10] as well as a solid UZR of 6.3.[11]Scutaro, on the other hand, posted a below average UZR of -1.6, but was able

[9] Appendix Summary 1
[10] Appendix Summary 2
[11] Appendix: Summary 3

to score 100 times, well above the league average of 72. When team-friendly contracts are added for both players, seeing them on this list should not come as a surprise.

The next group of players are all in the same situation. Aside from Jayson Werth, who enjoyed a career year in 2009, well out of line with his production earlier in his career, all of these players are young players who signed team friendly contracts before establishing themselves as stars. Longoria, Pedroia, Tulowitzki, Morales, Braun, Zimmerman, and Kinsler are all under the age of 27 and signed to long term contracts. Aside from Morales, all of them scored over 100 runs in 2009, and aside from Braun they all posted league average or above UZR. The other interesting thing about this group of players is that besides Longoria and Morales, they all belong to teams that are at least in the bottom twelve in payroll. [12]

There are many things that one can take from this chart. First, there are many ways that a player can come to be undervalued in Major League Baseball. It can be a journeyman who is solid in all aspects of the game who enjoys a career year at a discount price (Scutaro, Theriot). It can be a player that always showed promise but never quite lived up to the hype who breaks out (Werth). While both of these methods are plausible, they are not easily replicated. It seems that the best strategy for a team that wants to win while still keeping an eye on its budget is to sign their young players to long term deals before they blossom into true stars. Detractors will counter by saying that for every Evan Longoria there is a Jeff Francouer, someone who showed promise early but could never quite put it all together. While this might be true, signing a young player to a team friendly contract will never hurt your team as much as signing a big name free agent to a mega deal and watching him struggle. Even though the teams that employ these players tend to be frugal, they seem to have it figured out. The only one of these teams that has not been a competitor recently is the Washington Nationals, all of the other teams have

[12] Appendix Table 1

contended in the past three years, with the Rays and the Rockies playing in two of the last three World Series.

The Top Ten Undervalued Pitchers

A list of the then most undervalued pitchers of my model:

Name	Team		FIP	IP	Team IP	% IP	MRP Pitcher *1000000	Actual Salary (2009)	Over/Under Valued
1.	Tim Lincecum	Giants	2.34	225.1	1446	15.57%	$9,146,829.77	$650,000	$8,496,829.77
2.	Ubaldo Jimenez	Rockies	3.36	218	1438.1	15.16%	$7,153,991.46	$750,000	$6,403,991.46
3.	Jon Lester	Red Sox	3.15	203.1	1436.2	14.14%	$7,010,531.23	$1,000,000	$6,010,531.23
4.	Josh Johnson	Marlins	3.06	209	1446.1	14.45%	$7,312,266.94	$1,400,000	$5,912,266.94
5.	Zack Greinke	Royals	2.33	229.1	1426	16.07%	$9,458,148.56	$3,750,000	$5,708,148.56
6.	Adam Wainwright	Cardinals	3.11	233	1440.2	16.18%	$8,093,638.91	$2,787,500	$5,306,138.91
7.	Justin Verlander	Tigers	2.8	240	1447	16.59%	$8,880,549.23	$3,675,000	$5,205,549.23
8.	Kevin Correia	Padres	3.81	198	1450.2	13.65%	$5,746,880.49	$750,000	$4,996,880.49
9.	Gavin Floyd	White Sox	3.77	193	1439.2	13.41%	$5,705,387.03	$750,000	$4,955,387.03
10.	Scott Baker	Twins	4.08	200	1453	13.76%	$5,372,395.06	$750,000	$4,622,395.06

All of the ten undervalued pitchers in my model fall into the same group, young players who have just started to realize their potential in the Major Leagues. None of these players have been traded since they became a full time starter, and they are all signed to team friendly deals. This list mirrors the logic that allowed teams to sign the underrated position players. Sign a young player to a team friendly deal just as he begins to realize his potential in order to lock up premium players at a discount price.

The Top Ten Overvalued Position Players

	Name	Team	MRP *1000000	Actual Contract (2009)	Over/Under Valued
1.	Alex Rodriguez	Yankees	4,086,262.18	$33,000,000	-28,913,737.82
2.	Manny Ramirez	Dodgers	2,836,782.07	$25,000,000	-22,163,217.93
3.	Magglio Ordonez	Tigers	2,645,545.44	$19,200,000	-16,554,454.56
4.	Carlos Lee	Astros	3,051,706.75	$19,000,000	-15,948,293.25
5.	Derek Jeter	Yankees	6,765,095.49	$21,600,000	-14,834,904.51
6.	Mark Teixeira	Yankees	6,057,927.69	$20,625,000	-14,567,072.31
7.	Torii Hunter	Angels	4,246,101.25	$18,000,000	-13,753,898.75
8.	Alfonso Soriano	Cubs	3,527,105.24	$17,000,000	-13,472,894.76
9.	Ichiro Suzuki	Mariners	5,834,828.84	$18,000,000	-12,165,171.16
10.	Michael Young	Rangers	3,852,665.84	$16,000,000	-12,147,334.16

This table shows the ten position players who are most overvalued in the baseball market today according to my model. While some players could not have done more to play their way onto this list, some of baseball's biggest stars somehow made it onto here. The two names at the top of the list really do not deserve to be chastised completely. Alex Rodriguez missed the beginning part of the season waiting for his hip to recover and Manny Ramirez was levied a 50 game suspension for testing positive for performance-enhancing drugs. However, even with those excuses, each of them would probably have still found themselves on this list due to their unbelievably high 2009 salaries. To put Alex Rodriguez's 2009 salary into perspective, the sum of the 2009 salaries of all the players on the top 10 most undervalued list is $16,057,500, less than half of Rodriguez's 2009 salary alone. Because both players missed a significant of last year, it is hard to say whether this column is a fair representation of their 2009 seasons. The fact that they were both able to qualify for the plate appearance and inning standards of this data set speaks to their teams' needs to have them playing whenever possible.

Player's such as Magglio Ordonez, Carlos Lee, Alfonso Soriano, and Michael Young have all started to downgrade as they near the twilight of their enormous contracts. All of these players are in the second half of contracts worth at least $75 million over at least 5 years. Some of these players will continue to make upwards of $15 million in 2010. Players like these are the reasons that low budget teams avoid signing aging free agents to long term contracts. Besides Young, all of these players are employed by teams with payrolls in the top ten.[13] Luckily for the Rangers, they have been able to surround Young with enough young talent that his contract has not been financially crippling to the team. Most low budget teams that have one bad free agent signing end up putting themselves in financial handcuffs for years. The big market teams can take chances on high profile free agents because they can afford to eat the losses if it does not work out. They thrive on luring free agents and trading with low budget teams, waving a handful of cash at anyone willing to jump ship, to acquire players in the middle of their primes for mega contracts. Soriano was signed by Chicago from the Nationals to an eight year $136 million dollar contract when he was coming off a 45 homerun 95 RBI season. Ordonez was signed by Detroit from the White Sox to a five year $75 million dollar contract. He was injured for the majority of the year before he signed the contract, but the year before that he had a 29 homerun 99 RBI season. Lee was signed by Houston to a six year $100 million dollar contract when he was coming 37 homerun 116 RBI season with the Brewers and Rangers. Each one of these cases involves a big market team plucking a player in his prime from a small market team, and in each one of these cases, the player has declined after making the move.[14]

The case of the last four players, Derek Jeter, Mark Teixeira, Torii Hunter, and Ichiro Suzuki, requires some more explaining. No one has ever walked away from a baseball game thinking to themselves that Derek Jeter is the fifth most overrated player in baseball. The only way to explain these players as

[13] Appendix Table 1
[14] Appendix Table 2

coming up as overvalued is that they affect the game in other ways that extend beyond just their play on the field. These players are part of the phenomena called the “superstar effect”. Because my model does not take into account the effect these players have on a team beyond on-field statistics, players like these will always be overvalued according to my model. People will show up at a ballpark just to see Derek Jeter play, no matter if he has scored five runs or 500. This effect shows up in his contract as the value above his on field performance. Teams are willing to pay extra to make sure players like Jeter, Teixeira, Ichiro, and Hunter play for them. While it is another topic of debate entirely as to whether anyone can truly be worth a $20-plus million dollar salary per year like Jeter and Teixeira are currently earning, one must concede that they are worth more than the $6 million dollar salary this model predicts. Below is a list of players I feel have fallen victim to the superstar effect in my model.

	Name	Team	R	Pos	UZR	MRP *1000000	Actual Contract (2009)	Over/Under Valued
1.	Derek Jeter	Yankees	107	SS	6.2	6,765,095.49	$21,600,000	-14,834,904.51
2.	Mark Teixeira	Yankees	103	1B	0.1	6,057,927.69	$20,625,000	-14,567,072.31
3.	Torii Hunter	Angels	74	CF	-1.3	4,246,101.25	$18,000,000	-13,753,898.75
4.	Ichiro Suzuki	Mariners	88	RF	8.6	5,834,828.84	$18,000,000	-12,165,171.16
5.	Miguel Cabrera	Tigers	96	1B	2.6	5,840,278.28	$15,000,000	-9,159,721.72
6.	Ryan Howard	Phillies	105	1B	2.1	6,330,229.70	$15,000,000	-8,669,770.30
7.	Albert Pujols	Cardinals	124	1B	2.6	7,484,989.19	$16,000,000	-8,515,010.81
8.	David Ortiz	Red Sox	77	DH		4,522,955.00	$13,000,000	-8,477,045.00
9.	Chipper Jones	Braves	80	3B	-6.7	4,180,518.13	$11,000,000	-6,819,481.87
10.	Joe Mauer	Twins	94	C		5,521,529.48	$10,500,000	-4,978,470.52
11.	Chase Utley	Phillies	112	2B	11.6	7,476,815.03	$11,285,714	-3,808,898.97
12.	David Wright	Mets	88	3B	-9.7	4,418,201.55	$7,750,000	-3,331,798.45
13.	Jimmy Rollins	Phillies	100	SS	3	6,106,201.51	$8,500,000	-2,393,798.49
14.	Brian Roberts	Orioles	110	2B	-4	6,151,718.98	$8,000,000	-1,848,281.02
15.	Carl Crawford	Rays	96	LF	17.6	7,001,448.19	$8,250,000	-1,248,551.81
16.	Prince Fielder	Brewers	103	1B	0.5	6,088,892.22	$7,000,000	-911,107.78
17.	Grady Sizemore	Indians	73	CF	-4.6	3,931,904.19	$4,767,000	-835,095.81

Top Ten Overvalued Pitchers

A list of the ten most overvalued pitchers according to my model:

Name	Team	FIP	% IP	MRP Pitcher *1000000	Actual Salary (2009)	Over/Under Valued
1. Johan Santana	Mets	3.79	11.65%	$4,932,188.23	$20,000,000	-$15,067,811.77
2. Barry Zito	Giants	4.31	13.28%	$4,836,229.05	$18,500,000	-$13,663,770.95
3. Carlos Zambrano	Cubs	3.61	11.70%	$5,190,721.05	$18,750,000	-$13,559,278.95
4. A.J. Burnett	Yankees	4.33	14.28%	$5,167,305.63	$16,500,000	-$11,332,694.37
5. Derek Lowe	Braves	4.06	13.28%	$5,213,888.55	$15,000,000	-$9,786,111.45
6. Kevin Millwood	Rangers	4.8	13.82%	$4,265,753.79	$14,000,000	-$9,734,246.21
7. Mark Buehrle	White Sox	4.46	14.81%	$5,141,265.72	$14,000,000	-$8,858,734.28
8. CC Sabathia	Yankees	3.39	15.86%	$7,431,894.88	$15,285,714	-$7,853,819.12
9. Ted Lilly	Cubs	3.65	12.25%	$5,377,675.28	$13,000,000	-$7,622,324.72

Once again, the same thing that held true for the overpaid hitters also holds true for pitchers. Big budget teams are willing to spend money on pitchers in their prime. Of these pitchers, the only ones who were not acquired through trade were Mark Buehrle and Carlos Zambrano. These players have played on opposite sides of Chicago for their entire careers and some of their overvaluation can be ascribed to the superstar effect.

Chone Figgins? The Value of Defense

Here are the top twenty position players as ranked by marginal revenue product according to my model:

Name		Team	R	Pos	UZR	MRP *1000000
1.	Chone Figgins	Angels	114	3B	16.3	7,958,127.62
2.	Albert Pujols	Cardinals	124	1B	2.6	7,484,989.19
3.	Chase Utley	Phillies	112	2B	11.6	7,476,815.03
4.	Ryan Zimmerman	Nationals	110	3B	13.1	7,475,452.67
5.	Franklin Gutierrez	Mariners	85	CF	31	7,392,623.55
6.	Dustin Pedroia	Red Sox	115	2B	7.5	7,335,647.62
7.	Evan Longoria	Rays	100	3B	18.1	7,275,112.56
8.	Carl Crawford	Rays	96	LF	17.6	7,001,448.19
9.	Ian Kinsler	Rangers	101	2B	10.9	6,776,490.67
10.	Derek Jeter	Yankees	107	SS	6.2	6,765,095.49
11.	Michael Bourn	Astros	97	CF	9.7	6,448,638.38
12.	Ryan Howard	Phillies	105	1B	2.1	6,330,229.70
13.	Jayson Werth	Phillies	98	RF	7.4	6,329,332.00
14.	Ben Zobrist	Rays	91	2B	12.3	6,263,504.28
15.	Jason Bay	Red Sox	103	LF	1.9	6,197,268.08
16.	Brian Roberts	Orioles	110	2B	-4	6,151,718.98
17.	Jimmy Rollins	Phillies	100	SS	3	6,106,201.51
18.	Prince Fielder	Brewers	103	1B	0.5	6,088,892.22
19.	Kevin Youkilis	Red Sox	99	1B	8.2	6,083,587.12
20.	Mark Teixeira	Yankees	103	1B	0.1	6,057,927.69

Chone Figgins? Ahead of Pujols and Utley? While this might seem farfetched at first, there is much more to this assertion than meets the eye. One of the main points of this model was to see what happened when players were compared not only on their offensive prowess, but also their skills with the glove. While Figgins might not be the vaunted power hitter as some of the others in this group, he thrives on getting on base, being aggressive on the base paths, scoring runs, and saving them in the field. Considering that last year Figgins scored only ten less runs than Pujols, while also posting a UZR 13.7 greater than him, it makes perfect sense that he would be rated ahead of him.

Looking at the trends among these players, they averaged 103.65 runs scored and an 8.8 UZR. Both well above the means in each category.[15] In fact, none of the players on this list were below the league average in runs scored. The amount of runs a team scores is most closely related to how many wins this a team has, so it makes sense that the best players are the best at scoring runs. Defensively, these players were also among the league's best, highlighted by Franklin Gutierrez, who turned in a 31 UZR, considered the defensive equivalent of hitting .400. Every player except for two was above the league average in UZR. Mark Teixeira had a barely below average .1 UZR, while Ben Roberts had a pretty bad -4 UZR. Roberts was able to make up for this by scoring the sixth most runs in the league in 2009. The results speak pretty clearly, even if a player is an exceptional hitter, he must play defense in order to be considered among the league's best.

Here is a look at contract values among the highest rated position players in this model:

	Name	R	UZR	MRP Runs	MRP UZR	MRP *1000000	Actual Contract (2009)	Over/Under Valued
1.	Chone Figgins	114	16.3	6.696	1.262	7,958,127.62	$5,775,000	2,183,127.62
2.	Albert Pujols	124	2.6	7.284	0.201	7,484,989.19	$16,000,000	-8,515,010.81
3.	Chase Utley	112	11.6	6.579	0.898	7,476,815.03	$11,285,714	-3,808,898.97
4.	Ryan Zimmerman	110	13.1	6.461	1.014	7,475,452.67	$3,325,000	4,150,452.67
5.	Franklin Gutierrez	85	31	4.993	2.400	7,392,623.55	$455,000	6,937,623.55
6.	Dustin Pedroia	115	7.5	6.755	0.581	7,335,647.62	$1,750,000	5,585,647.62
7.	Evan Longoria	100	18.1	5.874	1.401	7,275,112.56	$550,000	6,725,112.56
8.	Carl Crawford	96	17.6	5.639	1.362	7,001,448.19	$8,250,000	-1,248,551.81
9.	Ian Kinsler	101	10.9	5.933	0.844	6,776,490.67	$3,200,000	3,576,490.67
10.	Derek Jeter	107	6.2	6.285	0.480	6,765,095.49	$21,600,000	-14,834,904.51
11.	Michael Bourn	97	9.7	5.698	0.751	6,448,638.38	$434,500	6,014,138.38
12.	Ryan Howard	105	2.1	6.168	0.163	6,330,229.70	$15,000,000	-8,669,770.30
13.	Jayson Werth	98	7.4	5.756	0.573	6,329,332.00	$2,500,000	3,829,332.00
14.	Ben Zobrist	91	12.3	5.345	0.918	6,263,504.28	$415,900	5,847,604.28
15.	Jason Bay	103	1.9	6.050	0.147	6,197,268.08	$7,750,000	-1,552,731.92

[15] Appendix Summary 2, 3

16.	Brian Roberts	110	-4	6.461	-0.310	6,151,718.98	$8,000,000	-1,848,281.02
17.	Jimmy Rollins	100	3	5.874	0.232	6,106,201.51	$8,500,000	-2,393,798.49
18.	Prince Fielder	103	0.5	6.050	0.039	6,088,892.22	$7,000,000	-911,107.78
19.	Kevin Youkilis	99	8.2	5.815	0.268	6,083,587.12	$6,250,000	-166,412.88
20.	Mark Teixeira	103	0.1	6.050	0.008	6,057,927.69	$20,625,000	-14,567,072.31

Seven of the ten players with above a seven UZR are undervalued by Major League Baseball. The three exceptions to this rule are Chase Utley, Carl Crawford, and Kevin Youkilis. Two of these players have previously been mentioned as falling victim to the superstar effect, while the Youkilis is only overpaid by $166,412.88. The power players of this group: Pujols, Jeter, Howard, Bay, Roberts, Rollins, Fielder, and Teixeira, are all overpaid. People might rather pay to see home runs then solid defense, but both will get the job done at the end of the day.

Here is another example of Major League Baseball overvaluing hitting, a sample of the designated hitter contracts in the MLB today:

	Name	R	MRP *1000000	Actual Contract (2009)	Over/Under Valued
1.	Jason Kubel	73	4,287,996.30	2,750,000.00	1,537,996.30
2.	Luke Scott	61	3,583,120.19	2,400,000.00	1,183,120.19
3.	Ken Griffey Jr.	44	2,584,545.71	2,000,000.00	584,545.71
4.	Mike Jacobs	46	2,702,025.06	3,275,000.00	-572,974.94
5.	Pat Burrell	45	2,643,285.39	7,000,000.00	-4,356,714.61
6.	David Ortiz	77	4,522,955.00	13,000,000.00	-8,477,045.00
7.	Hideki Matsui	62	3,641,859.87	13,000,000.00	-9,358,140.13
8.	Jim Thome	55	3,230,682.14	13,000,000.00	-9,769,317.86
9.	Vladimir Guerrero	59	3,465,640.84	15,000,000.00	-11,534,359.16
Average		58.00	3,406,901.17	7,936,111.11	-4,076,288.95

These players all qualified as designated hitters because they play exclusively in the American League and had 400 plate appearances but did not qualify for my innings requirement. This means that these players spent the majority of their time at the designated hitter. Because a designated hitter

spends no time playing the field, the only chance that he has to impact the game is with the bat. This would be fine if teams were paying the designated hitters half the money as position players. In fact, the opposite is happening. Designated hitters were paid an average of $7.9 million last year, compare that to the marginal revenue product of Chone Figgins, the player with the highest marginal revenue product in 2009, and they are almost equal. A designated hitter would have to score 133.92 runs in order to justify a contract of that magnitude.[16] Considering that Albert Pujols led the league in 2009 with 124, it seems unlikely that someone could justify that annual salary.

VI. Conclusions

The analysis of the Major League Baseball labor market through player's marginal revenue products has led me to several conclusions. One of the more striking findings that came from my model is the difference in strategy between small budget teams and large budget teams. Each navigates the market in an equally unique way. I also found a glaring inefficiency in how the baseball labor market evaluates defense. Defensive stalwarts are largely snubbed of the pay they deserve so that large contracts can go to the always more attractive power hitters.

Low Budget Baseball

Through my analysis of both most undervalued position players and pitchers, I was able to gain some insight into the strategy of low budget Major League teams. It seems that low budget teams are adopting a strategy of "promoting from within". They develop their young players in their Minor League systems and reward them with long term contracts when they arrive in the Major Leagues. Of the six position players who fit the description (young, undervalued, and signed to a long term contract), four of them belonged to teams with payrolls in the bottom half of the MLB. Extending this idea to pitchers, seven of the ten belonged to teams with payrolls in the bottom half. By signing these young players to

[16] 7.9/0.058989= 133.92

long term contracts, low budget teams avoid having to take the risk of signing a high-priced free agent. Even though the contracts usually only last to one or two years of the prime of the players, the teams are getting good players at a steep discount and can reload with the compensation picks they receive when these players are inevitably signed to large free agent contracts. Because of this, scouting and the farm system are paramount to the success of a low budget baseball team. In order to have success in a market that is increasingly stacked against them, they must make savvy draft picks and know when to trade the players they have to get the right guys. The low budget teams that have been most successful in this era are the Rays and the Rockies. Both teams thrive on the draft and making good trades. On the Rays current roster, there are nine players acquired through the draft, ten through trade, and five through free agency. The core members of the pitching staff and the line-up were all acquired through the draft. The Rockies field a team with eleven players acquired through the draft, four acquired as amateur free agents, five through trade, and five through free agency. The Rockies entire starting line-up is comprised of players they acquired through the draft.[17]

Big Budget Baseball

The teams operating with high payrolls run their organizations in a completely opposite way than the low-budget teams. They thrive on offering large contracts to free agents when the low budget teams are no longer able to afford their players. Eight of the ten most overvalued pitchers and nine of the ten most overvalued position players are currently playing for high budget ball clubs. This says a few things about the way that these teams are runs. Because these teams are operating with a high pay roll, they are constantly under pressure to perform sooner rather than later. General Managers will do whatever it takes to win as soon as possible. Sometimes it means giving a player a five year contract when they know they only have two left on their prime. Big budget baseball tends to sacrifice the future in order to see immediate results. The most stunning example of this is the New York Yankees. In 2008 it

[17] http://www.fangraphs.com/blogs/index.php/appreciating-the-rockies-and-rays

seemed they had finally learned their lesson, hampered with the contracts of injured and old pitchers such as Kevin Brown, Randy Johnson, and Mike Mussina, the Yankees Brian Cashman vowed he would be more careful in acquiring pitchers through trade and the offseason. Any other team would have been crippled by one of the contracts, much less all three. In the 2008 offseason the Yankees signed CC Sabathia and AJ Burnett, both over thirty years old and with Burnett being a known injury risk, to long term contracts making them two of the highest paid players in baseball. While those two guys helped them win the World Series in 2009 as the staff's number one and two pitchers, it would not be surprising if down the road the Yankees find themselves paying exorbitant amounts of money for two old guys to sit on the bench. Only time will tell, and such is the nature of big budget baseball.

Undervaluing Defense

The last of my findings is that the baseball labor market is currently underestimating the value of defense. By looking at the players with the top twenty marginal revenue products and examining those with UZR's over seven, I was able to find that the majority of them were underpaid. This trend does not just hold true for the top twenty players. Table 3 shows all players with a UZR of above 7.[18] Of the thirty eight players who qualified, only nine were found to be overpaid. Table four extends this analysis to the top thirty eight players in runs scored, of which nineteen were found to be overpaid.[19] People often fall in love with the mystique of home runs and offense, meanwhile forgetting that defense is half the game. This is reflected in the fact that defensively skilled players are consistently underpaid in favor of talented offensive players.

Continuing

Moving forward, there are a few things that could be modified in my model in order to make it more effective.

[18] Appendix Table 3
[19] Appendix Table 4

Runs

While runs scored are the best indicator of team success, they are not the best predictor of individual offensive talent. Generally, the players on the best teams score the most runs because they have better players hitting behind them. For example, in 2009 Chone Figgins and Shin-Soo Choo had very similar on-base percentages, .395 and .394 respectively, with a very different amount of runs scored. Figgins was third in the league with 114 runs, while Choo only scored 87. The idea is that if Choo and Figgins swapped teams, their runs scored might change as well.

A better representation of individual contribution to a team would be weighted runs above average (wRAA). Weighted runs above average measures the number of runs a player contributes to a team above what an average player would produce. This statistic accounts for all factors of offensive production, making it a better choice for the model. I would have used this statistic if I could knew how individual players' wRAA factored into a team's wRAA.

Catchers

Because UZR does not currently exist for catchers, I was not able to factor defense into a catcher's value. This led to catchers being undervalued by my model. In the future, when a metric for catcher's defensive ability is created, the model will be able to more correctly evaluate a catcher's true value.

Superstar Effect

As outlined earlier, the salaries for superstar players were generally much less than the actual contracts for these players. I had a few ideas for eliminating this problem. The first was to create a dummy variable for superstars. The problem with this was that there is no objective definition of a superstar, so this analysis would have been routed in my opinion of who is a superstar and who is not. The second idea was to include a variable for total endorsements for a team as a measure of which

players were superstars and which were not. This idea is excellent in theory, but the data on player endorsements is not readily available.

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VII. Appendix

Variables

WP= team wins/games played*1000. Gives the percentage of games that a team won in the 2009 season.

$RUNS_t$= the amount of runs a team scored in the 2009 season

FIP_T= (HR*13+(BB+HBP-IBB)*3-K*2)/IP[20]. Represents a player's "fielding independent pitching," meaning how well a player pitched regardless of how his team fielded.

CONT= a dummy variable equal to 1 if the team finished within five games of first place of the division and 0 otherwise.

OUT= a dummy variable that equal to 1 if a team finishes 20 games or more out of the division lead and 0 otherwise

UZR_t= the number of runs above or below average a team is in both range runs and error runs combined.[21] The sum of the UZRs of a team's players. Range runs are the number of runs above or below average a fielder is, determined by how the fielder is able to get to balls hit in his vicinity and error runs are the number of runs above or below average a fielder is, determined by the number of errors he makes as compared to an average fielder at that position given the same distribution of balls in play. The end result of UZR is to show how many runs a player saved or allowed compared to a league average player at his position.

REV= a team's revenue measured in millions in 2009.

POP= a team's market size measured in millions in 2009.

TV= a dummy variable equal to 1 if a team owns its own television station and 0 otherwise.

RATING= the television rating a team received for locally broadcast games in 2009.

$RUNS_p$= the amount of runs a player scored in the 2009 season.

UZR_P= the number of runs above or below average a player is in both range runs and error runs combined in 2009.

FIP_P= a player's fielding independent pitching in 2009.

%IP= the percentage of his team's total innings that a player pitched in 2009.

[20] http://www.hardballtimes.com/main/statpages/glossary/
[21] Fangraphs.com

Regressions

Regression 1: Team Winning Percentage

```
. regress wp runs fip cont out uzr
```

Source	SS	df	MS
Model	128992.683	5	25798.5365
Residual	14863.3174	24	619.304893
Total	143856	29	4960.55172

Number of obs = 30
F(5, 24) = 41.66
Prob > F = 0.0000
R-squared = 0.8967
Adj R-squared = 0.8752
Root MSE = 24.886

wp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
runs	.3705702	.080471	4.61	0.000	.2044861	.5366543
fip	-71.52405	17.34738	-4.12	0.000	-107.3273	-35.72083
cont	36.02232	12.72083	2.83	0.009	9.767817	62.27681
out	-51.22421	14.7845	-3.46	0.002	-81.73792	-20.7105
uzr	.4883638	.1769022	2.76	0.011	.1232555	.8534721
_cons	538.049	80.40599	6.69	0.000	372.0992	703.9988

Regression 2: Team Revenue

```
. regress rev wp pop1 tv rating
```

Source	SS	df	MS
Model	50717.9657	4	12679.4914
Residual	11987.8274	24	499.49281
Total	62705.7931	28	2239.49261

Number of obs = 29
F(4, 24) = 25.38
Prob > F = 0.0000
R-squared = 0.8088
Adj R-squared = 0.7770
Root MSE = 22.349

rev	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wp	.1585116	.0795074	1.99	0.058	-.0055836	.3226068
pop1	6.085343	1.08795	5.59	0.000	3.839924	8.330761
tv	27.53062	13.03465	2.11	0.045	.6284263	54.43281
rating	7.808715	2.259412	3.46	0.002	3.145518	12.47191
_cons	37.5356	34.86097	1.08	0.292	-34.4139	109.4851

Summary 1: Summary of $MRP_{positionplayer}$

```
. sum mrppositionplayer
```

Variable	Obs	Mean	Std. Dev.	Min	Max
mrppositio~r	**222**	**4.247896**	**1.2873**	**.995**	**7.958**

Summary 2: Summary of Runs Scored

Variable	Obs	Mean	Std. Dev.	Min	Max
r	**221**	**72.04977**	**19.32314**	**34**	**124**

Summary 3: Summary of Player UZR

Variable	Obs	Mean	Std. Dev.	Min	Max
uzr	**195**	**.4528205**	**7.867926**	**-21.8**	**31**

Table 1: MLB Payroll

Team	Payroll
Yankees	$206,811,689
Mets	$139,102,235
Cubs	$137,945,612
Tigers	$129,598,000
Phillies	$127,957,380
Red Sox	$122,624,689
Angels	$116,709,000
Dodgers	$109,176,603
Astros	$105,035,000
Mariners	$99,346,926
White Sox	$98,268,500
Braves	$97,692,834
Cardinals	$93,612,500
Giants	$88,777,106
Indians	$81,325,900
Blue Jays	$80,493,657
Brewers	$80,280,861
Orioles	$77,169,792
Rangers	$76,239,840
Royals	$76,021,243
Rockies	$74,730,533
Diamondbacks	$72,475,000
Reds	$71,858,500
Twins	$67,899,267
Rays	$65,126,368
Athletics	$61,896,066
Nationals	$61,455,049
Pirates	$52,643,000
Padres	$42,746,653
Marlins	$35,483,951

Table 2: Big Signing Decline- Statistics Before and after Trade

Carlos Lee

SEASON	TEAM	R	H	2B	3B	HR	RBI	AVG	OBP	SLG	OPS
2006	Mil	60	111	18	0	28	81	0.286	0.347	0.549	0.896
2006	Tex	42.00	76	19	1	9	35	0.322	0.369	0.525	0.894
2006	--	102.00	187	37	1	37	116	0.3	0.355	0.54	0.895
2007	Hou	93.00	190	43	1	32	119	0.303	0.354	0.528	0.882
2008	Hou	61.00	137	27	0	28	100	0.314	0.368	0.569	0.937
2009	Hou	65.00	183	35	1	26	102	0.3	0.343	0.489	0.832

Alfonso Soriano

SEASON	TEAM	R	H	2B	3B	HR	RBI	AVG	OBP	SLG	OPS
2006	Was	119	179	41	2	46	95	0.277	0.351	0.56	0.911
2007	ChC	97	173	42	5	33	70	0.299	0.337	0.56	0.897
2008	ChC	76	127	27	0	29	75	0.28	0.344	0.532	0.876
2009	ChC	64	115	25	1	20	55	0.241	0.303	0.423	0.726

Magglio Ordonez

SEASON	TEAM	R	H	2B	3B	HR	RBI	AVG	OBP	SLG	OPS
2003	CWS	95	192	46	3	29	99	0.317	0.38	0.546	0.926
2004	CWS	32	59	8	2	9	37	0.292	0.351	0.485	0.836
2005	Det	38	92	17	0	8	46	0.302	0.359	0.436	0.795
2006	Det	82	177	32	1	24	104	0.298	0.35	0.477	0.827
2007	Det	117	216	54	0	28	139	0.363	0.434	0.595	1.029
2008	Det	72	178	32	2	21	103	0.317	0.376	0.494	0.87
2009	Det	54	144	24	2	9	50	0.31	0.376	0.428	0.804

Table 3: All Players with 7+ UZR

	Name	Pos	UZR	MRP *1000000	Actual Contract (2009)	Over/Under Valued
1.	Franklin Gutierrez	CF	31	7,392,623.55	$455,000	6,937,623.55
2.	Evan Longoria	3B	18.1	7,275,112.56	$550,000	6,725,112.56
3.	Carl Crawford	LF	17.6	7,001,448.19	$8,250,000	-1,248,551.81
4.	Chone Figgins	3B	16.3	7,958,127.62	$5,775,000	2,183,127.62
5.	Nyjer Morgan	CF	15.4	5,431,418.87	$411,500	5,019,918.87
6.	David DeJesus	LF	15.3	5,531,129.28	$3,600,000	1,931,129.28
7.	Adrian Beltre	3B	14.2	4,271,183.31	$13,400,000	-9,128,816.69
8.	Ryan Sweeney	RF	13.8	4,738,276.07	$410,000	4,328,276.07
9.	Jack Wilson	SS	13.6	3,226,162.04	$7,450,000	-4,223,837.96
10.	Ryan Zimmerman	3B	13.1	7,475,452.67	$3,325,000	4,150,452.67
11.	Elvis Andrus	SS	12.9	5,227,862.75	$400,000	4,827,862.75
12.	Hunter Pence	RF	12.5	5,431,856.92	$439,000	4,992,856.92
13.	Ben Zobrist	RF	12.3	6,263,504.28	$415,900	5,847,604.28
14.	Casey Blake	3B	12	5,863,068.65	$5,000,000	863,068.65
15.	Juan Rivera	LF	11.7	5,134,969.15	$3,250,000	1,884,969.15
16.	Chase Utley	2B	11.6	7,476,815.03	$11,285,714	-3,808,898.97
17.	Mike Cameron	CF	11.1	5,440,960.41	$10,000,000	-4,559,039.59
18.	Ian Kinsler	2B	10.9	6,776,490.67	$3,200,000	3,576,490.67
19.	J.D. Drew	RF	10.8	5,770,175.06	$14,000,000	-8,229,824.94
20.	Placido Polanco	2B	10.3	5,613,990.05	$4,600,000	1,013,990.05
21.	Willy Taveras	CF	10.1	4,071,276.22	$2,250,000	1,821,276.22
22.	Nelson Cruz	RF	9.9	5,171,847.79	$408,070	4,763,777.79
23.	Michael Bourn	CF	9.7	6,448,638.38	$434,500	6,014,138.38
24.	Randy Winn	RF	9.3	4,449,311.86	$9,250,000	-4,800,688.14
25.	Pedro Feliz	3B	9.2	4,354,044.08	$5,000,000	-645,955.92
26.	Colby Rasmus	CF	9	4,925,958.57	$400,000	4,525,958.57
27.	Cesar Izturis	SS	8.9	2,686,109.77	$2,400,000	286,109.77

28.	Ichiro Suzuki	RF	8.6	5,834,828.84	$18,000,000	-12,165,171.16
29.	Justin Upton	RF	8.5	5,592,129.01	$412,000	5,180,129.01
30.	Kevin Youkilis	1B	8.2	6,083,587.12	$6,250,000	-166,412.88
31.	Kendry Morales	1B	8.2	5,686,384.96	$1,100,000	4,586,384.96
32.	Rajai Davis	CF	8.2	4,452,851.78	$410,000	4,042,851.78
33.	Alex Gonzalez	SS	7.6	2,892,401.57	$5,375,000	-2,482,598.43
34.	Dustin Pedroia	2B	7.5	7,335,647.62	$1,750,000	5,585,647.62
35.	Brendan Ryan	SS	7.5	3,811,267.10	$403,000	3,408,267.10
36.	Jayson Werth	RF	7.4	6,329,332.00	$2,500,000	3,829,332.00
37.	Aaron Rowand	CF	7.2	4,140,481.75	$9,600,000	-5,459,518.25
38.	Maicer Izturis	2B	7	4,888,615.26	$1,600,000	3,288,615.26

Table 4: Top 38 Runs Scored

	Name	Team	R	MRP *1000000	Actual Contract (2009)	Over/Under Valued
1.	Albert Pujols	Cardinals	124	7,484,989.19	$16,000,000	-8,515,010.81
2.	Dustin Pedroia	Red Sox	115	7,335,647.62	$1,750,000	5,585,647.62
3.	Chone Figgins	Angels	114	7,958,127.62	$5,775,000	2,183,127.62
4.	Ryan Braun	Brewers	113	5,615,753.79	$1,032,500	4,583,253.79
5.	Chase Utley	Phillies	112	7,476,815.03	$11,285,714	-3,808,898.97
6.	Ryan Zimmerman	Nationals	110	7,475,452.67	$3,325,000	4,150,452.67
7.	Brian Roberts	Orioles	110	6,151,718.98	$8,000,000	-1,848,281.02
8.	Derek Jeter	Yankees	107	6,765,095.49	$21,600,000	-14,834,904.51
9.	Johnny Damon	Yankees	107	5,967,758.82	$13,000,000	-7,032,241.18
10.	Ryan Howard	Phillies	105	6,330,229.70	$15,000,000	-8,669,770.30
11.	Jason Bay	Red Sox	103	6,197,268.08	$7,750,000	-1,552,731.92
12.	Prince Fielder	Brewers	103	6,088,892.22	$7,000,000	-911,107.78
13.	Mark Teixeira	Yankees	103	6,057,927.69	$20,625,000	-14,567,072.31

14.	Robinson Cano	Yankees	103	5,879,881.64	$6,000,000	-120,118.36
15.	Aaron Hill	Blue Jays	103	5,632,165.39	$2,590,000	3,042,165.39
16.	Shane Victorino	Phillies	102	5,534,720.05	$3,125,000	2,409,720.05
17.	Ian Kinsler	Rangers	101	6,776,490.67	$3,200,000	3,576,490.67
18.	Troy Tulowitzki	Rockies	101	5,963,671.74	$1,000,000	4,963,671.74
19.	Hanley Ramirez	Marlins	101	5,824,331.35	$5,500,000	324,331.35
20.	Evan Longoria	Rays	100	7,275,112.56	$550,000	6,725,112.56
21.	Jimmy Rollins	Phillies	100	6,106,201.51	$8,500,000	-2,393,798.49
22.	Marco Scutaro	Blue Jays	100	5,750,109.41	$1,100,000	4,650,109.41
23.	Kevin Youkilis	Red Sox	99	6,083,587.12	$6,250,000	-166,412.88
24.	Jayson Werth	Phillies	98	6,329,332.00	$2,500,000	3,829,332.00
25.	Mark Reynolds	Diamondbacks	98	5,299,761.35	$422,500	4,877,261.35
26.	Michael Bourn	Astros	97	6,448,638.38	$434,500	6,014,138.38
27.	Denard Span	Twins	97	5,631,317.99	$435,000	5,196,317.99
28.	Matt Kemp	Dodgers	97	5,937,723.62	$467,000	5,470,723.62
29.	Carl Crawford	Rays	96	7,001,448.19	$8,250,000	-1,248,551.81
30.	Miguel Cabrera	Tigers	96	5,840,278.28	$15,000,000	-9,159,721.72
31.	Bobby Abreu	Angels	96	4,981,012.55	$5,000,000	-18,987.45
32.	Matt Holliday	- - -	94	5,815,692.52	$13,500,000	-7,684,307.48
33.	Nick Markakis	Orioles	94	5,057,061.52	$3,350,000	1,707,061.52
34.	Jacoby Ellsbury	Red Sox	94	4,762,898.47	$449,500	4,313,398.47
35.	Joe Mauer	Twins	94	5,521,529.48	$10,500,000	-4,978,470.52
36.	Raul Ibanez	Phillies	93	5,756,952.85	$7,166,667	-1,409,714.15
37.	Adam Lind	Blue Jays	93	4,711,899.93	$411,800	4,300,099.93
38.	Michael Cuddyer	Twins	93	4,688,676.53	$7,666,667	-2,977,990.47

Table 5: First Base Value

Name	Pos	MRP *1000000	Actual Contract (2009)	Over/Under Valued
Kendry Morales	1B	5,686,384.96	$1,100,000	4,586,384.96
Joey Votto	1B	4,801,171.11	$437,500	4,363,671.11
James Loney	1B	4,388,631.02	$465,000	3,923,631.02
Billy Butler	1B	4,163,673.51	$421,000	3,742,673.51
Daniel Murphy	1B	3,965,625.08	$401,000	3,564,625.08
Russell Branyan	1B	3,976,090.94	$1,400,000	2,576,090.94
Adrian Gonzalez	1B	5,673,627.41	$3,125,000	2,548,627.41
Chris Davis	1B	2,571,788.17	$406,620	2,165,168.17
Ryan Garko	1B	2,430,187.73	$446,100	1,984,087.73
Jorge Cantu	1B	3,730,498.31	$3,500,000	230,498.31
Kevin Youkilis	1B	6,083,587.12	$6,250,000	-166,412.88
Casey Kotchman	1B	2,637,835.95	$2,885,000	-247,164.05
Ty Wigginton	1B	2,191,928.55	$2,500,000	-308,071.45
Prince Fielder	1B	6,088,892.22	$7,000,000	-911,107.78
Victor Martinez	1B	4,983,304.24	$5,900,000	-916,695.76
Nick Johnson	1B	3,899,577.30	$5,500,000	-1,600,422.70
Hank Blalock	1B	3,626,377.60	$6,200,000	-2,573,622.40
Adam LaRoche	1B	4,364,942.96	$7,050,000	-2,685,057.04
Carlos Pena	1B	4,981,477.22	$8,000,000	-3,018,522.78
Adam Dunn	1B	3,676,308.67	$8,000,000	-4,323,691.33
Lyle Overbay	1B	3,348,161.49	$7,950,000	-4,601,838.51
Aubrey Huff	1B	3,148,254.40	$8,000,000	-4,851,745.60
Justin Morneau	1B	5,372,187.91	$11,600,000	-6,227,812.09
Paul Konerko	1B	4,537,074.91	$12,000,000	-7,462,925.09
Derrek Lee	1B	5,616,250.10	$13,250,000	-7,633,749.90
Albert Pujols	1B	7,484,989.19	$16,000,000	-8,515,010.81
Ryan Howard	1B	6,330,229.70	$15,000,000	-8,669,770.30
Miguel Cabrera	1B	5,840,278.28	$15,000,000	-9,159,721.72
Lance Berkman	1B	3,970,609.86	$14,500,000	-10,529,390.14
Todd Helton	1B	4,555,281.89	$16,600,000	-12,044,718.11
Mark Teixeira	1B	6,057,927.69	$20,625,000	-14,567,072.31

Table 6: Second Base Value

Name	Pos	MRP*1000000	Actual Salary (2009)	Over/Under Valued
Dustin Pedroia	2B	7,335,647.62	$1,750,000	5,585,647.62
Skip Schumaker	2B	4,528,404.44	$430,000	4,098,404.44
Ian Kinsler	2B	6,776,490.67	$3,200,000	3,576,490.67
Alberto Callaspo	2B	3,966,955.80	$415,500	3,551,455.80
Howie Kendrick	2B	3,885,024.37	$465,000	3,420,024.37
Maicer Izturis	2B	4,888,615.26	$1,600,000	3,288,615.26
Martin Prado	2B	3,604,516.57	$415,000	3,189,516.57
Aaron Hill	2B	5,632,165.39	$2,590,000	3,042,165.39
Craig Counsell	2B	4,008,882.49	$1,000,000	3,008,882.49
Clint Barmes	2B	4,378,165.17	$1,625,000	2,753,165.17
David Eckstein	2B	3,488,399.57	$850,000	2,638,399.57
Jose Lopez	2B	4,084,002.13	$1,600,000	2,484,002.13
Chris Getz	2B	2,762,127.10	$401,000	2,361,127.10
Anderson Hernandez	2B	2,422,446.59	$400,000	2,022,446.59
Mike Fontenot	2B	2,339,000.19	$430,000	1,909,000.19
Felipe Lopez	2B	5,385,843.14	$3,500,000	1,885,843.14
Placido Polanco	2B	5,613,990.05	$4,600,000	1,013,990.05
Orlando Hudson	2B	4,091,278.59	$3,380,000	711,278.59
Robinson Cano	2B	5,879,881.64	$6,000,000	-120,118.36
Brandon Phillips	2B	4,914,563.38	$5,187,500	-272,936.62
Nick Punto	2B	3,467,467.87	$4,000,000	-532,532.13
Adam Kennedy	2B	3,422,879.46	$4,000,000	-577,120.54
Dan Uggla	2B	4,152,278.32	$5,350,000	-1,197,721.68
Mark Ellis	2B	3,224,768.04	$5,000,000	-1,775,231.96
Brian Roberts	2B	6,151,718.98	$8,000,000	-1,848,281.02
Kaz Matsui	2B	3,250,716.15	$5,500,000	-2,249,283.85
Luis Castillo	2B	3,655,948.13	$6,250,000	-2,594,051.87
Freddy Sanchez	2B	3,544,879.20	$6,250,000	-2,705,120.80
Chase Utley	2B	7,476,815.03	$11,285,714	-3,808,898.97

Table 7: Third Base Value

Name	MRP *1000000	Actual Contract (2009)	Over/Under Valued
Evan Longoria	7275112.556	550000	$6,725,112.56
Mark Reynolds	5299761.35	422500	$4,877,261.35
Ian Stewart	4594452.221	404000	$4,190,452.22
Ryan Zimmerman	7475452.672	3325000	$4,150,452.67
Pablo Sandoval	4268859.979	401750	$3,867,109.98
Andy LaRoche	4177360.388	413500	$3,763,860.39
Emilio Bonifacio	3826717.721	400000	$3,426,717.72
Kevin Kouzmanoff	3455639.659	432000	$3,023,639.66
Gordon Beckham	3437865.699	500000	$2,937,865.70
Chone Figgins	7958127.621	5775000	$2,183,127.62
Juan Uribe	2917048.636	1000000	$1,917,048.64
Jerry Hairston	3587671.94	2000000	$1,587,671.94
Casey Blake	5863068.654	5000000	$863,068.65
Geoff Blum	2074560.288	1250000	$824,560.29
Mark Teahen	3518899.438	3575000	$56,100.56
Pedro Feliz	4354044.081	5000000	$645,955.92
Mark DeRosa	4109485.578	5500000	$1,390,514.42
Brandon Inge	4689172.84	6300000	$1,610,827.16
David Wright	4418201.553	7750000	$3,331,798.45
Melvin Mora	2909673.289	8000000	$5,090,326.71
Scott Rolen	4882236.491	11625000	$6,742,763.51
Chipper Jones	4180518.132	11000000	$6,819,481.87
Adrian Beltre	4271183.315	13400000	$9,128,816.69
Mike Lowell	2351382.397	12500000	$10,148,617.60
Michael Young	3852665.838	16000000	$12,147,334.16
Alex Rodriguez	4086262.18	33000000	$28,913,737.82
	$4,378,285.56	$5,981,682.69	$1,544,012.05

Table 8: Catcher Value

Name	MRP *1000000	Actual Contract (2009)	Over/Under Valued
Kurt Suzuki	4346735.973	410,000.00	$3,936,735.97
Miguel Montero	3583120.194	425,000.00	$3,158,120.19
John Baker	3465640.844	400,000.00	$3,065,640.84
Ivan Rodriguez	3230682.142	1,500,000.00	$1,730,682.14
Mike Napoli	3524380.519	2,000,000.00	$1,524,380.52
Miguel Olivo	2995723.441	2,700,000.00	$295,723.44
Dioner Navarro	2232107.662	2,100,000.00	$132,107.66
Gerald Laird	2878244.09	2,800,000.00	$78,244.09
Brian McCann	3700599.545	3,666,667.00	$33,932.54
Rod Barajas	2525806.039	2,500,000.00	$25,806.04
Russell Martin	3700599.545	3,900,000.00	-$199,400.46
Yadier Molina	2643285.389	3,312,500.00	-$669,214.61
Jason Kendall	2819504.415	5,000,000.00	-$2,180,495.58
Jason Varitek	2408326.688	5,000,000.00	-$2,591,673.31
A.J. Pierzynski	3348161.493	6,250,000.00	-$2,901,838.51
Bengie Molina	3054463.116	6,000,000.00	-$2,945,536.88
Joe Mauer	5521529.48	10,500,000.00	-$4,978,470.52
Jorge Posada	3230682.142	13,100,000.00	-$9,869,317.86

Table 9 : Outfielder Value

Name	MRP *1000000	Actual Contract (2009)	Over/Under Valued
Franklin Gutierrez	7,392,623.55	455,000.00	6,937,623.55
Michael Bourn	6,448,638.38	434,500.00	6,014,138.38
Matt Kemp	5,937,723.62	467,000.00	5,470,723.62
Denard Span	5,631,317.99	435,000.00	5,196,317.99
Justin Upton	5,592,129.01	412,000.00	5,180,129.01
Nyjer Morgan	5,431,418.87	411,500.00	5,019,918.87
Hunter Pence	5,431,856.92	439,000.00	4,992,856.92
Nelson Cruz	5,171,847.79	408,070.00	4,763,777.79
B.J. Upton	5,166,831.38	435,000.00	4,731,831.38
Ryan Braun	5,615,753.79	1,032,500.00	4,583,253.79
Colby Rasmus	4,925,958.57	400,000.00	4,525,958.57
Shin-Soo Choo	4,924,564.57	420,300.00	4,504,264.57
Ryan Sweeney	4,738,276.07	410,000.00	4,328,276.07
Jacoby Ellsbury	4,762,898.47	449,500.00	4,313,398.47
Adam Lind	4,711,899.93	411,800.00	4,300,099.93
Rajai Davis	4,452,851.78	410,000.00	4,042,851.78

Chris Coghlan	4,423,217.97	475,000.00	3,948,217.97
Adam Jones	4,318,031.49	435,000.00	3,883,031.49
Jayson Werth	6,329,332.00	2,500,000.00	3,829,332.00
Andrew McCutchen	4,230,618.98	422,500.00	3,808,118.98
Tony Gwynn	3,883,662.01	419,800.00	3,463,862.01
David Murphy	3,823,095.31	414,820.00	3,408,275.31
Gerardo Parra	3,392,699.10	405,500.00	2,987,199.10
Melky Cabrera	4,186,463.88	1,400,000.00	2,786,463.88
Scott Podsednik	4,405,475.65	1,650,000.00	2,755,475.65
Brandon Moss	3,163,303.64	414,500.00	2,748,803.64
Ben Francisco	3,087,063.37	421,400.00	2,665,663.37
Chase Headley	3,061,274.91	411,500.00	2,649,774.91
Dexter Fowler	3,049,415.06	401,000.00	2,648,415.06
Nate McLouth	5,136,764.54	2,500,000.00	2,636,764.54
Shane Victorino	5,534,720.05	3,125,000.00	2,409,720.05
David DeJesus	5,531,129.28	3,600,000.00	1,931,129.28
Juan Rivera	5,134,969.15	3,250,000.00	1,884,969.15
Matt Diaz	3,113,799.08	1,237,500.00	1,876,299.08
Nolan Reimold	2,274,435.74	400,000.00	1,874,435.74
Willy Taveras	4,071,276.22	2,250,000.00	1,821,276.22
Scott Hairston	3,044,896.08	1,250,000.00	1,794,896.08
Jack Cust	4,557,541.94	2,800,000.00	1,757,541.94
Curtis Granderson	5,252,416.86	3,500,000.00	1,752,416.86
Cody Ross	3,970,548.90	2,225,000.00	1,745,548.90
Nick Markakis	5,057,061.52	3,350,000.00	1,707,061.52
Willie Bloomquist	3,031,239.72	1,400,000.00	1,631,239.72
Elijah Dukes	1,968,909.15	415,500.00	1,553,409.15
Andre Ethier	4,304,809.28	3,100,000.00	1,204,809.28
Josh Willingham	3,825,355.36	2,950,000.00	875,355.36
Chris Young	2,722,956.77	1,950,000.00	772,956.77
Delmon Young	1,822,260.65	1,152,000.00	670,260.65
Jose Bautista	3,048,084.34	2,400,000.00	648,084.34
Jeff Francoeur	3,997,022.64	3,375,000.00	622,022.64
Jeremy Hermida	2,642,273.22	2,250,000.00	392,273.22
Marlon Byrd	3,266,078.83	3,060,000.00	206,078.83
Ryan Ludwick	3,816,716.54	3,700,000.00	116,716.54
Corey Hart	3,325,835.79	3,250,000.00	75,835.79
Bobby Abreu	4,981,012.55	5,000,000.00	-18,987.45
Rick Ankiel	2,604,115.06	2,825,000.00	-220,884.94
Garret Anderson	2,241,644.18	2,500,000.00	-258,355.82
Nick Swisher	4,818,015.74	5,400,000.00	-581,984.26
Grady Sizemore	3,931,904.19	4,767,000.00	-835,095.81
Carl Crawford	7,001,448.19	8,250,000.00	-1,248,551.81

Raul Ibanez	5,756,952.85	7,166,667.00	-1,409,714.15
Vernon Wells	3,649,104.69	5,142,857.00	-1,493,752.31
Jason Bay	6,197,268.08	7,750,000.00	-1,552,731.92
Brad Hawpe	3,268,426.83	5,500,000.00	-2,231,573.17
Alex Rios	4,125,934.75	6,400,000.00	-2,274,065.25
Michael Cuddyer	4,688,676.53	7,666,667.00	-2,977,990.47
Milton Bradley	3,281,216.02	6,333,333.00	-3,052,116.98
Mike Cameron	5,440,960.41	10,000,000.00	-4,559,039.59
Randy Winn	4,449,311.86	9,250,000.00	-4,800,688.14
Aaron Rowand	4,140,481.75	9,600,000.00	-5,459,518.25
Juan Pierre	3,657,806.80	10,000,000.00	-6,342,193.20
Johnny Damon	5,967,758.82	13,000,000.00	-7,032,241.18
Matt Holliday	5,815,692.52	13,500,000.00	-7,684,307.48
J.D. Drew	5,770,175.06	14,000,000.00	-8,229,824.94
Kosuke Fukudome	4,036,626.00	12,500,000.00	-8,463,374.00
Jermaine Dye	2,894,127.74	11,500,000.00	-8,605,872.26
Ichiro Suzuki	5,834,828.84	18,000,000.00	-12,165,171.16
Alfonso Soriano	3,527,105.24	17,000,000.00	-13,472,894.76
Torii Hunter	4,246,101.25	18,000,000.00	-13,753,898.75
Carlos Lee	3,051,706.75	19,000,000.00	-15,948,293.25
Magglio Ordonez	2,645,545.44	19,200,000.00	-16,554,454.56
Manny Ramirez	2,836,782.07	25,000,000.00	-22,163,217.93

Table 11 : Designated Hitter Value

Name	R	MRP *1000000	Actual Contract (2009)	Over/Under Valued
Jason Kubel	73	4,287,996.30	2,750,000.00	1,537,996.30
Luke Scott	61	3,583,120.19	2,400,000.00	1,183,120.19
Ken Griffey Jr.	44	2,584,545.71	2,000,000.00	584,545.71
Mike Jacobs	46	2,702,025.06	3,275,000.00	-572,974.94
Pat Burrell	45	2,643,285.39	7,000,000.00	-4,356,714.61
David Ortiz	77	4,522,955.00	13,000,000.00	-8,477,045.00
Hideki Matsui	62	3,641,859.87	13,000,000.00	-9,358,140.13
Jim Thome	55	3,230,682.14	13,000,000.00	-9,769,317.86
Vladimir Guerrero	59	3,465,640.84	15,000,000.00	-11,534,359.16
Average	58.00	3,406,901.17	7,936,111.11	-4,076,288.95

Table 12: Shortstop Value

Name	MRP *1000000	Actual Contract (2009)	Over/Under Valued
Troy Tulowitzki	5,963,671.74	1,000,000.00	4,963,671.74
Yunel Escobar	5,351,689.23	425,000.00	4,926,689.23
Elvis Andrus	5,227,862.75	400,000.00	4,827,862.75
Ryan Theriot	5,245,605.06	500,000.00	4,745,605.06
Marco Scutaro	5,750,109.41	1,100,000.00	4,650,109.41
Erick Aybar	4,522,057.31	460,000.00	4,062,057.31
Asdrubal Cabrera	4,448,268.39	416,700.00	4,031,568.39
Brendan Ryan	3,811,267.10	403,000.00	3,408,267.10
Alexei Ramirez	4,441,456.59	1,225,000.00	3,216,456.59
Jason Bartlett	5,015,631.13	1,981,250.00	3,034,381.13
Stephen Drew	4,247,928.27	1,500,000.00	2,747,928.27
Everth Cabrera	2,730,233.23	400,000.00	2,330,233.23
Brendan Harris	2,583,793.72	466,100.00	2,117,693.72
Hanley Ramirez	5,824,331.35	5,500,000.00	324,331.35
Cesar Izturis	2,686,109.77	2,400,000.00	286,109.77
Jhonny Peralta	3,325,641.83	3,400,000.00	-74,358.17
Orlando Cabrera	3,807,116.73	4,000,000.00	-192,883.27
J.J. Hardy	3,624,117.55	4,650,000.00	-1,025,882.45
Yuniesky Betancourt	994,888.78	2,375,000.00	-1,380,111.22
Rafael Furcal	5,845,294.69	7,500,000.00	-1,654,705.31
Jimmy Rollins	6,106,201.51	8,500,000.00	-2,393,798.49
Alex Gonzalez	2,892,401.57	5,375,000.00	-2,482,598.43
Cristian Guzman	4,083,537.46	8,000,000.00	-3,916,462.54
Jack Wilson	3,226,162.04	7,450,000.00	-4,223,837.96
Edgar Renteria	3,014,395.09	8,000,000.00	-4,985,604.91
Miguel Tejada	4,008,386.19	15,000,000.00	-10,991,613.81
Derek Jeter	6,765,095.49	21,600,000.00	-14,834,904.51

Table 13: Pitcher Value

Name	Team	MRP Pitcher *1000000	Actual Salary (2009)	Over/Under Valued
Tim Lincecum	Giants	$9,146,829.77	$650,000	$8,496,829.77
Ubaldo Jimenez	Rockies	$7,153,991.46	$750,000	$6,403,991.46
Jon Lester	Red Sox	$7,010,531.23	$1,000,000	$6,010,531.23
Josh Johnson	Marlins	$7,312,266.94	$1,400,000	$5,912,266.94
Zack Greinke	Royals	$9,458,148.56	$3,750,000	$5,708,148.56
Adam Wainwright	Cardinals	$8,093,638.91	$2,787,500	$5,306,138.91
Justin Verlander	Tigers	$8,880,549.23	$3,675,000	$5,205,549.23
Kevin Correia	Padres	$5,746,880.49	$750,000	$4,996,880.49
Gavin Floyd	White Sox	$5,705,387.03	$750,000	$4,955,387.03
Scott Baker	Twins	$5,372,395.06	$750,000	$4,622,395.06
Nick Blackburn	Twins	$5,047,751.46	$440,000	$4,607,751.46
James Shields	Rays	$6,099,491.31	$1,500,000	$4,599,491.31
Felix Hernandez	Mariners	$8,243,089.27	$3,800,000	$4,443,089.27
Scott Feldman	Rangers	$4,804,910.91	$434,680	$4,370,230.91
Randy Wells	Cubs	$4,718,211.88	$402,000	$4,316,211.88
John Lannan	Nationals	$4,631,318.87	$424,000	$4,207,318.87
John Danks	White Sox	$4,622,707.70	$520,000	$4,102,707.70
Ricky Romero	Blue Jays	$4,440,321.29	$400,000	$4,040,321.29
Carl Pavano	Indians, Twins	$5,518,352.02	$1,500,000	$4,018,352.02
Wandy Rodriguez	Astros	$6,479,246.19	$2,600,000	$3,879,246.19
Jonathan Sanchez	Giants	$4,287,306.25	$455,000	$3,832,306.25
J.A. Happ	Phillies	$4,129,022.11	$405,000	$3,724,022.11
Jeff Niemann	Rays	$4,942,692.94	$1,290,000	$3,652,692.94
Ricky Nolasco	Marlins	$6,051,965.98	$2,400,000	$3,651,965.98
Livan Hernandez	Mets, Nationals	$4,491,516.33	$900,000	$3,591,516.33
Ross Ohlendorf	Pirates	$3,948,008.13	$413,500	$3,534,508.13
Max Scherzer	Diamondbacks	$4,867,373.23	$1,450,000	$3,417,373.23
Zach Duke	Pirates	$5,589,949.63	$2,200,000	$3,389,949.63
Johnny Cueto	Reds	$3,768,476.18	$418,000	$3,350,476.18
Matt Cain	Giants	$6,186,227.69	$2,900,000	$3,286,227.69
Jorge de la Rosa	Rockies	$5,268,892.45	$2,000,000	$3,268,892.45
Edwin Jackson	Tigers	$5,436,956.44	$2,200,000	$3,236,956.44
Paul Maholm	Pirates	$5,733,124.45	$2,500,000	$3,233,124.45
Joe Saunders	Angels	$3,433,301.70	$475,000	$2,958,301.70
Jeremy Guthrie	Orioles	$3,510,910.91	$650,000	$2,860,910.91
Trevor Cahill	Athletics	$3,061,172.16	$400,000	$2,661,172.16
Mike Pelfrey	Mets	$4,585,182.04	$2,237,500	$2,347,682.04

Cliff Lee	Indians, Phillies	$8,025,582.87	$6,000,000	$2,025,582.87
Rick Porcello	Tigers	$3,670,727.03	$2,162,500	$1,508,227.03
Cole Hamels	Phillies	$5,723,763.90	$4,350,000	$1,373,763.90
Randy Wolf	Dodgers	$5,870,409.09	$5,000,000	$870,409.09
		$5,119,582.24	$1,513,423.78	$534,814.55
Dan Haren	Diamondbacks	$7,704,300.08	$7,500,000	$204,300.08
Joel Pineiro	Cardinals	$7,164,102.06	$7,500,000	-$335,897.94
Andy Pettitte	Yankees	$5,121,098.56	$5,500,000	-$378,901.44
Joe Blanton	Phillies	$4,670,442.92	$5,475,000	-$804,557.08
Brad Penny	Red Sox, Giants	$4,178,195.68	$5,000,000	-$821,804.32
Jon Garland	Diamondbacks, Dodgers	$4,847,419.89	$6,250,000	-$1,402,580.11
Braden Looper	Brewers	$2,735,091.16	$4,750,000	-$2,014,908.84
Roy Oswalt	Astros	$5,402,404.92	$8,000,000	-$2,597,595.08
Ryan Dempster	Cubs	$5,731,271.52	$9,000,000	-$3,268,728.48
Javier Vazquez	Braves	$8,073,889.41	$11,500,000	-$3,426,110.59
Jason Marquis	Rockies	$5,828,245.39	$9,875,000	-$4,046,754.61
Doug Davis	Diamondbacks	$4,268,304.31	$8,750,000	-$4,481,695.69
Josh Beckett	Red Sox	$6,517,515.54	$11,166,667	-$4,649,151.46
John Lackey	Angels	$5,240,167.75	$10,000,000	-$4,759,832.25
Roy Halladay	Blue Jays	$8,333,636.74	$14,250,000	-$5,916,363.26
Bronson Arroyo	Reds	$4,693,676.80	$10,750,000	-$6,056,323.20
Jarrod Washburn	Mariners, Tigers	$4,046,842.06	$10,350,000	-$6,303,157.94
Aaron Harang	Reds	$4,263,471.98	$11,000,000	-$6,736,528.02
Chris Carpenter	Cardinals	$7,175,679.20	$14,000,000	-$6,824,320.80
Ted Lilly	Cubs	$5,377,675.28	$13,000,000	-$7,622,324.72
CC Sabathia	Yankees	$7,431,894.88	$15,285,714	-$7,853,819.12
Mark Buehrle	White Sox	$5,141,265.72	$14,000,000	-$8,858,734.28
Kevin Millwood	Rangers	$4,265,753.79	$14,000,000	-$9,734,246.21
Derek Lowe	Braves	$5,213,888.55	$15,000,000	-$9,786,111.45
A.J. Burnett	Yankees	$5,167,305.63	$16,500,000	-$11,332,694.37
Carlos Zambrano	Cubs	$5,190,721.05	$18,750,000	-$13,559,278.95
Barry Zito	Giants	$4,836,229.05	$18,500,000	-$13,663,770.95
Johan Santana	Mets	$4,932,188.23	$20,000,000	-$15,067,811.77

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