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The Value of Youth in Major League Baseball

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THE VALUE OF YOUTH IN MAJOR LEAGUE BASEBALL

SUBMITTED TO

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Introduction

In the fall of 2009, the New York Yankees claimed their 27th World Series title with a team that oozed capitalism and free markets. With over $200 million committed in its annual payroll, the Yankees capitalized on a strong free-agent class and some of the best known players in the game to generate their first World Series title since 2000. The feat was impressive, but the expectation in New York is always "championship or bust." The following season, the Yankees fell in the American League Championship Series to the Texas Rangers who would go on to lose to the San Francisco Giants. The San Francisco Giants were not the New York Yankees. They were not even close when it came to payroll, star-power, and management. Yet this lovable bunch of losers took control of the 2010 post-season and took home their first World Series since moving to San Francisco.

This team was comprised of old and young players, but heavily reliant on its young. Riding on the small shoulders of youngsters Tim Lincecum, Matt Cain, and rookie Madison Bumgarner, the San Francisco Giants pitched their way into history. What should be remembered about this team though is the fact that this team was thought to be one of the worst run franchises in the league. While blessed with talented youngsters, the San Francisco Giants were weighed down by some of the worst free-agent contracts in history. Barry Zito, who at the time of his signing, had the most expensive contract for a pitcher in baseball history, did not throw a single pitch in the post-season. Veteran Aaron Rowand had been offered to teams for practically nothing all

season long, but no team would bite due to his inflated $11 million annual salary[1]. And yet, in spite of having nearly a third of the team payroll committed to two insignificant players, the San Francisco Giants were able to win a World Series because of their talented, money-efficient, young roster.

The biggest trend in baseball now lies in the final trait above, youth. But it is a stark change in management since the beginning of the past decade. Following the success of the New York Yankees at the turn of the century, teams have begun spending in greater amounts during free agency, which has resulted in greater investment in aging players as a result of the most recent collective bargaining agreement. However, the success of these investments is debatable. With bloated contracts such as Barry Zito's and with the success of such young players as Tim Lincecum, baseball appears to be seeing a paradigm shift in managerial practices. Furthermore, the latest economic crisis has resulted in a greater emphasis on financial responsibility for teams going forward. Greater financial responsibility generally has always meant one thing: tighter budgets. While this trimming of budgets seems to always be stressed every off-season, the numbers seem to indicate otherwise. Free-agent spending has not dropped considerably over the course of this decade when analyzing the most expensive contracts of free-agency.

In a brief analysis of free agency from 2006-2009, it was found that out of the top-ten richest contracts awarded in each off-season, 17 of the total 40 top-ten contracts were handed out by three teams (New York Yankees, Boston Red Sox, Chicago Cubs). Furthermore, out of the top-twenty players in each free agency class over the four year

[1] "MLB Baseball Roster Analysis." ESPN.com, accessed February 16, 2011, http://espn.go.com/mlb/stats/rosters.

analysis, 43 players were signed by six teams (New York Yankees, Boston Red Sox, Chicago Cubs, Philadelphia Phillies, LA Dodgers, and LA Angels) out of the possible 80 top-twenty players (*see Appendix C*). This data shows a clear disparity in the amount of money spent by teams, and the type of spending habits that exist in baseball today. The big market clubs spend the most during free-agency, and the small-market clubs must rely on home-grown talent in order to compete.

Smaller market clubs are the teams that are expected to rely on in-house talent to compete for championships. Because of the favorable conditions of a pre-free agent player's contract, small market teams are able to field a team of competitive talent for a very affordable price. However, these teams almost always lose these young players as a result of free-agency and their inability to compete with the money offered by the above-mentioned big market organizations. With no salary cap to ensure a financial balance, baseball exhibits a true free-market where money can be spent at any one team's discretion. While these smaller market clubs seem to be doomed to failure, several teams have managed to be successful and competitive by managing their young talent creatively. The most popular method for frugal teams to reach success is throughout trades. By trading away talented pre-free-agent players, small market clubs are able to acquire multiple players that can add depth to their organization. In example, the Oakland Athletics organization has been known for this practice. Following the 2005 baseball season, the Oakland A's had three premier pitchers not one of which had reached his free-agency eligibility. With the team already having lost their most talented hitters to free-agency, management opted to trade away two of their three star pitchers in order to acquire several players who would help them compete again in the future. Specifically,

the team traded away two pitchers in separate transactions that netted them eight prospects for the future. Such practices are commonly seen every year as players that are near their free-agency period (typically at the end of that season or the next season) are dealt for multiple prospects.

This endless cycle of rebuilding has yielded mixed results. Some teams, such as the Oakland Athletics, have produced winning results. Other teams, including the Pittsburgh Pirates, have remained in the lower echelon of the league. But of course, baseball, like all sports is not just about winning: it is also about making money. Not surprisingly, the big-market clubs are valued higher than small-market clubs in financial value. The New York Yankees are valued at over $1 billion dollars thanks to not only their $200+ million annual player payroll,[2] but also because of their expensive stadium, personal TV network, and merchandise/brand value. However, this does not necessarily mean that the Yankees or any big-market club is highly profitable. With such high operating costs, profit margins may not necessarily be what they appear to be. Therefore, it may be possible that the most profitable teams are teams that rely on youth or perhaps even a balance of youth and experience, at a reasonable price.

Management makes all of these actions happen. Every player that is signed to a contract is reviewed by management. However, we see two prevailing styles of management in existence today. On the one hand there are aggressive managers such as the Yankees' Brian Cashman. Year after year, the Yankees are the top players for the top free-agents and top trade targets, but they are rarely recognized for developing young prospects into successful players. Since the start of the past decade, the Yankees have

[2] "2011 MLB Salaries by Team - USATODAY.com." USATODAY.com, accessed March, 31, 2011, http://content.usatoday.com/sportsdata/baseball/mlb/salaries/team.

brought up only one All-Star throughout their organization (Robinson Cano). During the same decade the Yankees produced the most All-Stars, but only Cano was brought up throughout the organization over the course of the decade. At the moment, it seems that he may be the only one for several years since the Yankee pipeline has not shown promising signs of new prospects. Instead, the Yankees have invested their time and resources in acquiring talent that can make an impact on the following season as evidenced by the fact that Yankees have paid for four of the five most expensive baseball/sports contracts ever, all within the last decade. The Yankees are the extreme of the "win-now" mentality, but there are several other teams that exhibit aggressive transaction tactics.

The other side of the coin exists with small market teams who rely on building teams in windows. These windows exist as short time-spans of a few seasons in which the prospects of an organization are expected to peak together and allow the team to perform at an elite level. However, these windows eventually close because of free-agency where these players will depart for more lucrative markets. The Tampa Bay Rays are the most recent example of this window mentality. For the entire history of the Tampa Bay Devil Rays/Rays organization, the team existed in the bottom echelon of the league. However, in 2008, the team went from worst to first, making their first franchise playoff appearance and eventually a World Series appearance. The team repeated its success in 2009 and 2010, posting winning records and achieving another post-season appearance in 2010. However, the team is already reaching a point of decline. All-star Carl Crawford departed this off-season, and, over the past two seasons, the team has lost 6 different all-

star players and core pieces contributing to their success.[3] Furthermore, the simple truth is that the team's modest payroll of $42 million for 2011 will have prevented the team from making any significant transactions to improve their team over the off-season. But hope is not lost with the Tampa Bay Rays. Currently the Rays are ranked second in Keith Law's organizational rankings with eight prospects ranked among the top 100,[4] and the Rays are slated to have ten of the first sixty picks in the 2011 amateur draft,[5] which signals that the team will acquire even more talent. With such a great deal of talent, it is not out of the question to see the Rays back in competition for a World Series in four to five years.

The Tampa Bay Rays are expected to take a fall in the rankings this year, but no one doubts that this team will return to prominence. The Yankees are expected to compete once again for their 28th World Series title this season. The argument is that the aggressive actions of big-market teams are always to win now, but how successful is this strategy? Looking at the past decade of baseball, the Yankees have owned the most expensive payroll for every year of the decade, which has yielded nine post-season appearances and one World Series title. While one World Series has been perceived by the media as a failure, post-season success is much less predictable than the regular season. But the Yankees may be more of an exception than it seems. The New York Mets possessed a comparable payroll to Yankees for much of the decade, but the team has only appeared in the post-season and World Series once during the decade. The Chicago Cubs,

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[3] "MLB Baseball Roster Analysis."
[4] Keith Law, February 28, 2011,"First MLB organizational rankings for 2011 have Kansas City Royals predictably on top" http://insider.espn.go.com/mlb/insider/news/story?page=2011MLBOrgRanks.
[5] Bay News 9, April 14, 2011, "MLB set 2011 draft order and the Rays will be busy on day one," Bay News 9 . http://www.baynews9.com/article/sports/2011/april/232893/MLB-set-2011-draft-order-and-the-Rays-will-be-busy-on-day-one.

White Sox, and Seattle Mariners have also consistently ranked as teams with expensive payrolls, but, between the three clubs, only five post-season appearances have been made, with only one World Series title. Money clearly has not equated success for these clubs, especially with teams like the Oakland Athletics and Minnesota Twins appearing in more post-seasons (eight) than the Mets, Cubs, and White Sox combined, and with both teams showing payrolls averaging below $60 million each for the past decade.[6]

` Today, top prospects are guarded with the most protection possible. In 2009, the Philadelphia Phillies attempted to make a trade for All-Star pitcher, Roy Halladay from the Toronto Blue Jays. The deal was ultimately unsuccessful because the Phillies refused to part with their top pitching prospect, Kyle Drabek.[7] Instead, the Phillies traded for another All-Star pitcher, Cliff Lee, which did not require trading Kyle Drabek. While Lee ended being a very successful addition to the Phillies in 2009, Roy Halladay was considered to be the true prize of the trade market, and a favorite of the Phillies. However, the Phillies felt that trading a prospect with no known track record of success at the major league level was unreasonable, even if the prize was perennial All-Star and Cy Young award contender. The New York Mets also refused to make a trade for Roy Halladay by the same wisdom, with one Mets official being quoted saying the team was trying to avoid, "mortgaging our future."[8] The Mets had clearly shifted their mentality from just 18 months earlier when the team had traded away four prospects for similarly touted All-Star Johan Santana from the Minnesota Twins.

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[6] ESPN. "MLB Baseball Free Agent Tracker ," ESPN.com, http://espn.go.com/mlb/freeagents (accessed February 28, 2011).
[7] Jon Heyman, "Phillies won't trade Kyle Drabek for Roy Halladay; Cliff Lee news." SI.com, July 21, 2009, http://sportsillustrated.cnn.com/2009/writers/jon_heyman/07/21/daily.scoop/index.html.
[8] Heyman, "Phillies won't trade Kyle Drabek for Roy Halladay; Cliff Lee news."

Such decisions seem controversial. But the fact is that winning teams are built around a foundation of talented young players. The San Francisco Giants pitched their way to the 2010 World Series because of a highly talented pitching staff that stayed with the organization from their drafting to the World Series. Even the Giants' offense was anchored by a young, home-grown player, rookie Buster Posey. Posey was called up mid-season and was the heart of the Giants offense from his debut. The Tampa Bay Rays and Texas Rangers both made the postseason with two of the youngest teams in the league, with an average age of 27.7 for both teams.[9] Both teams were anchored by young, talented players who were expected to carry the team in place of long-time veterans. As the Rays exhibited though, such success takes time and patience.

The league even seems to support this belief as Major League Baseball is the only sport of American sports where teams cannot trade draft picks, and its draft has more than three times the number of rounds than all other American sports drafts combined. It is also the only sport where teams are compensated for the loss of players with draft picks. But this plethora of young talent is also encouraged by the league because of the incredible disparity of wealth allowed between teams. It is not surprising to see that the youngest teams also have the smallest payrolls. While conventional wisdom has told us that it is unlikely that these low-paying, young teams can compete with the behemoths of the large baseball markets, these teams compete every year for a trip to the postseason.

On the opposite side, the big-market teams are expected to compete year-in and year-out, but we have seen large market teams like the Chicago Cubs not just fail once, but almost yearly to make the postseason. Furthermore, the game of baseball is shifting

[9] Data provided by, www.baseball-reference.com

toward a more athletic game. It is a known fact that players lose reaction speed as they age, which is directly related to bat speed. But the game of baseball is also shifting toward a greater defensive focus, perhaps even to an unhealthy level.[10] The "hot" stat of the past few years has been UZR (Ultimate Zone Rating), which measures the skills required for a player's position and his total amount of area covered by his own personal athleticism. The measurement of a player's "zone" heavily favors younger players, as older players tend to become slower with age.

All of the above seems to support the fact that younger players are becoming the most valuable players in Major League Baseball. Free agency itself is recognized to be a gamble, and, with the majority of top free-agents going to financial powerhouses, it is even less likely that a star player can be acquired outside of an organization. Even the New York Yankees have begun protecting their favorite youngsters, with their refusal to trade prized youngsters Joba Chamberlain, Phil Hughes, and Jesus Montero. If the Yankees believe it, then it is clear that the youth movement is here to stay.

This thesis is geared specifically toward investigating the valuing/over-valuing of young players in baseball, and its effect on the game of baseball. Considering the numerous variables that are debated toward the success of a baseball organization, it seems necessary to try to discover the importance of these various factors toward the success of an organization. In total, this thesis will analyze several covariates that are currently disputed in their importance toward the success of a Major League Baseball franchise, including youth. The analysis will incorporate both qualitative and quantitative characteristics, and this thesis will look at their impact on an organization's success both

[10] Tim Marchman, "Did Red Sox, Mariners, White Sox go too far with defense?" May 13, 2010, SI.com, http://sportsillustrated.cnn.com/2010/writers/tim_marchman/05/13/run.prevention/index.html.

on the baseball field and in financial profits. This thesis will also look into the origination of the overvaluing of youth in baseball, and the causes of this overwhelming trend throughout the baseball world. Finally, this thesis will also analyze select organizations on a case-study basis. The purpose of each analysis will be to provide examples of the specific conditions that have coincided with the covariates under analysis, as well as exceptions and failures to the trends under analysis.

Chapter 1: History of the Youth Movement

Steroids and Performance Enhancing Drugs

Following the 1995 strike season in baseball, the game struggled to return to its previous prominence. Attendance lagged and the game lost its appeal.[11] This all changed in 1998 as baseball began its ascension to prominence on the backs of two big-time sluggers: Mark McGwire and Sammy Sosa. McGwire, who had slugged 58 homeruns the prior season, began the season on a monstrous tear: 27 homeruns in the season's first two months. From the start of the season, McGwire seemed poised to break the single-season home-run record. However, competition for the precious record emerged in June of 1998 when the relatively unknown Sammy Sosa slugged 20 homeruns in a single month to put himself just behind Mark McGwire. The two continued their bout up until the season's end, when both broke Roger Maris' single-season homerun record: Sosa finishing with 66 and McGwire with 70. The great homerun chase brought a new wave of interest and excitement to baseball that had not been seen since before the strike. The two athletes served as the new poster-boys of baseball.

The two new heroes also ended up becoming the poster-boys for a new era of baseball: the Performance Enhancing Drug Era. During a post-game interview it was discovered that Mark McGwire had been using androstenedione, a relatively unknown drug at the time. "Andro" (as it is commonly known) eventually became not only an illegal substance in baseball, but an illegal substance in the United States. The supplement is chemically a step short of testosterone and is easily converted to

[11] Mark Maske, "After the Strike, Baseball's Disgusted Fans Decide to Strike Back ." *The Washington Post*, April 30, 1995. http://www.highbeam.com/doc/1P2-837033.html.

testosterone when ingested. Andro was immediately identified by the media as a banned supplement by stricter athletic-ruling bodies: the NCAA and the Olympics. But when asked about the supplement, McGwire replied that "Everybody that I know in the game uses the same stuff I do."[12] McGwire's claim brought greater attention to steroids, which would eventually come to haunt the game of baseball for the next decade.

Following Mark McGwire's epic home-run season, a new era of power-hitting seemed to emerge. From 1998-2005, an individual player has hit 50+ homeruns in a season 14 times; the total number of 50+ homerun seasons in baseball history is 42.[13] While McGwire may have been the beginning of the "Steroid Era," he would ultimately not become the face of the era. This honor belongs to Barry Bonds.

For much of his career Barry Bonds was considered by many to have been the greatest player of his time. Bonds was the complete package on the field: he could hit for average, power, steal bases, and play defense. But Bonds seemed to be hidden from the spotlight despite all of his achievements. This changed during the 2001 baseball season. Barry Bonds slugged 73 homeruns in 2001, and would later go on to 762 career homeruns, which made him the single-season and career home-run king of baseball. But such achievements were not without controversy. Bonds' feats seemed supernatural. His 73 homerun season came at the age of 37; after turning 35 years-old, Barry Bonds hit 317 home-runs. 317 home-runs in 8 seasons accounted for 42% of Barry Bonds' career home-run total over his 22 seasons. While power-spikes are common, it was unheard of to see a man at the back-end of his career hitting for such power. This abnormality did not go

[12] ESPN, "Who Knew?." ESPN.com. http://sports.espn.go.com/espn/eticket/story?page=steroids&num=8.
[13] "Baseball-Reference.com - Major League Baseball Statistics and History." www.baseball-reference.com.

unnoticed. Despite his achievements, controversy and questioning followed Bonds throughout the rest of his career. The evidence was claimed to have been everywhere. Bonds' physique had transformed in his later years as he had: his hair fell out, head size increased, developed a great deal of acne, and had developed testicular abnormalities according to the testimony of his mistress, Kristen Bell in his recent perjury trial.[14]

With the media discounting the many accomplishments of Barry Bonds, the fans of baseball began screaming for drug-testing to ensure the purity of the sport. After negotiating with the players union, Major League Baseball announced an experimental testing phase in baseball. No results would be released from the test. Instead, the testing was meant to indicate how many players in baseball would test positive for banned substances (as indicated by other governing sports bodies) during the 2003 season. If more than 5% of players tested positive, mandatory testing with punitive action would be instituted. The names of players were to remain anonymous during this phase of testing. The results indicated that between 5-7% of players tested positive for banned substances. The first drug policy instituted was considered by many critics to be too light. The United States Senate Commerce Committee eventually urged Major League Baseball to institute a stricter punishment system than what it had in place. The resulting policy indicated 50-game, 100-game, and lifetime suspensions for subsequent testing failures. The new policy, which is still in practice today came into place for the 2006 Major League Baseball season.[15]

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[14] Associated Press, March 29, 2011, "Barry Bonds trial: Ex-mistress says slugger blamed injury on steroids." ESPN.com. http://sports.espn.go.com/mlb/news/story?id=6266163.
[15] "Drug Policy coverage." MLB.com. http://mlb.mlb.com/mlb/news/drug_policy.jsp?content=timeline.

Perhaps one of the greatest blows to the sport of baseball came in the infamous Mitchell Report, which provided detailed histories of players who had used steroids in the game of baseball. The report implicated several top players, and it provided the public with the great depth of knowledge on the positive and negative effects of steroids within the game of baseball. The findings of the report were not particularly shocking, but the fact that the government had become so involved in the report indicated that changes and transparency would be needed for baseball to move forward.

While steroids have gotten the most attention from the media, perhaps the most important drug to be investigated in Major League Baseball, and which may be the real source of the new youth movement, is amphetamines. Amphetamines have been rumored to be in existence in baseball since the 1940s, perhaps earlier. But it is these "greenies" that may actually be the source of baseball's latest trend toward youth. The use of amphetamines is well known. One can even argue that amphetamines are the reason that WWII was won by the Allies, as pilots were heavily reliant on amphetamines to keep them awake throughout long missions. Amphetamines are known to have similar effects to cocaine. The physiological effects of amphetamines include: wakefulness, alertness, decreased sense of fatigue, elevated of mood and confidence, and decreased appetite.[16] Because of these known benefits, it is obvious that amphetamines are extremely beneficial to a player during the course of a 162-game, six-month season. However, one of the commonly unknown benefits and pitfalls of amphetamines is its ability to distort its user's perception of reality, as well as harming the user's physical condition. This allows

[16] "Drugs and Sports: Amphetamines." ESPN.com, accessed January 21, 2011, http://espn.go.com/special/s/drugsandsports/amphet.html.

players to push their bodies throughout injury, which can be both beneficial and harmful. Amphetamines stay within the user's system for a longer period of time than cocaine.

The main purpose and benefit of amphetamines in baseball is to aid players throughout the grind of a 162-game season. Amphetamines provide its users with sustained levels of focus and mental alertness. In a *Sports Illustrated* cover story, former National League MVP Ken Caminiti provided a detailed outline of his use of steroids and performance enhancing drugs throughout his career. With regards to amphetamines, Caminiti spoke about their ability to get him energized for a game after a heavy night of drinking saying, ""You take some pills, go out and run in the outfield, and you get the blood flowing,"[17] Current Texas Rangers Manager, Ron Washington, has also admitted to using amphetamines during his career saying that, "Amphetamines were prevalent throughout baseball."[18] These benefits obviously seem to make a great deal of sense for players who are beginning to show the signs of aging and are unable to recover quickly from the previous day.

Because of their long history in baseball, the use of amphetamines has largely been overlooked. This has changed with the latest drug testing policy instituted by major league baseball for the 2006 season. Amphetamines now fall under the list of banned substances. However, the punitive measures do not match the harshness of anabolic steroids. Under the current performance enhancing drugs policy, players are put under

[17] Tom Verducci, "Getting Amped." Sports Illustrated, June 3, 2002, accessed November 19, 2010, http://sportsillustrated.cnn.com/vault/article/magazine/MAG1025905/index.htm.
[18] ESPN, "Texas Rangers' Ron Washington said he used amphetamines and marijuana during his playing days," accessed April 20, 2011, ESPN.com. http://sports.espn.go.com/dallas/mlb/news/story?id=5006406.

investigation and expansive testing when testing positive for amphetamines.[19] The banning of amphetamines should be noted as an area of great importance when evaluating the numbers of the post-steroid era in baseball especially when considering the numbers of players past the age of 30. Currently, the numbers of players past their 30s seem to be in decline.

The Effects of Drug Testing

Since baseball began drug testing the effects have been noticeable. Hitter statistics have changed significantly since the institution of drug testing. More specifically, power numbers have changed. From 1995 to 2005, the "peak" of the steroids era, Major League Baseball had 40 players average a slugging percentage over .500.[20][21] Following the institution of a formal drug policy, Major League Baseball saw that number drop to 31.[22] It also possible that this number could continue to drop over the next ten years as more data is collected. Furthermore, the total number of homeruns hit per season by the entire league dropped. Beginning in 1995 baseball homeruns increased steadily from around 4,000 per a season to nearly 6,000. The average homerun total per season from 1995-2005 was 5,106 homeruns. Since 2006, though, homerun production has dropped to

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[19] Jake Emen, "Amphetamines: The True Culprit in Baseball," Associated Content, accessed October 6, 2010, http://www.associatedcontent.com/article/319191/amphetamines_the_true_culprit_in_baseball.html?cat=71
[20] Data obtained from www.fangraphs.com
[21] Slugging percentage is a popular statistic used to measure the power hitting abilities of a player
[22] www.fangraphs.com

4,901.[23] While such drops may be coincidental, it is worth noting that such changes are falling in line with steroid policies.

While power numbers have declined, it should also be noted that the overall performance is also on the decline across the board in baseball. Looking at the best players (as determined by Wins Above Replacement) in MLB throughout the first-half of the past decade, when performance enhancing drugs were permitted, compared to the second-half, when performance enhancing drugs were banned, the number of players in the top 25 that were over the age of 30 were eight from 2001-2005 compared to five in 2006-2010. Of the five in 2006-2010, all five were listed in the previous half of the decade.[24] These signs indicate that there were no players over the age of 30 who emerged to be among the best players in the league. Rather all players that were among the best in the league over the age of 30 had already been established successful players. In comparison, compared to the previous half decade (1996-2000), only two players repeated as top performers in MLB past the age of 30. Of the eight players over the age of 30 who performed the best from 2001-2005, the peak of the steroid era, only two of those players had previously been among the best during the previous decade. This evidence obviously cannot show that performance enhancing drugs were the direct cause of such results, but it does show how rare it is for a player over the age of 30 to appear at the top of the game without previously been labeled as one of the sport's premier players.

In this post-steroid era, the ability to perform successfully at an elite level over the age of 30 is incredibly rare. In the past baseball season alone there were very few elite, single-season achievements accomplished by older players. In fact, the ability of any

[23] www.baseball-reference.com
[24] www.fangraphs.com

player to achieve into his late 30s is considered to be nearly impossible. Consider that over the past decade only two players over 35 to: hit 25 homeruns, drive in 100 RBIs, maintain a season slugging percentage over .500, an on-base percentage over .400, and make at least 400 plate appearances (roughly 125 games) are Barry Bonds and Manny Ramirez.[25] Of course, the two players have steroids and performance enhancing drugs attached to their names, and their remarkable success seems to be just that: too remarkable. On the other side of the diamond, pitchers have not fared any better. Within the same age bracket, no pitcher over the age of 30 in the last decade has won 15 games and had an ERA below 3.50. One pitcher has won 15 games (Derek Lowe), and one has sustained an ERA below 3.50 (Andy Pettite).[26] The late 30s are greatly feared in the post steroid-era, but being on the hook for a contract into the late 30's is even scarier.

With the banning of amphetamines, the expectation is that the performance of older players will decline, which has been the case for the most part. However, amphetamines are still in use in baseball, and it is a known fact to the public. Under the new drug policy, there are exceptions to players who need medication that may break the rules of the latest drug policy. The most notable exception has been in amphetamines used to combat attention deficit disorder (ADD). Before amphetamines were banned in baseball, only 28 players had filed for therapeutic exemptions. In 2010, 108 requests were filed with Major League Baseball. All requests are made for exemptions from

[25] Jayson Stark, "Big-money contracts in vogue this offseason." ESPN.com, accessed January 14, 2011, http://sports.espn.go.com/mlb/hotstove10/columns/story?columnist=stark_jayson&id=6021385.
[26] Stark, "Big-money contracts in vogue this offseason."

amphetamines to combat ADD.[27] Furthermore, during the 2009 season 15 players tested positive for stimulants. Of these 15, 13 tested positive for Adderall.[28]

The current estimate of the population that has been diagnosed with ADD varies between 3-5%. 108 exemption claims places the baseball ADD population at almost 10% of Major League Baseball.[29] Such a discrepancy seems to be pointing toward abuse, and it has been asked that the league further investigates the matter. However, such numbers also show that amphetamines are considered to be a very important factor for many players across the league.

A History of Free-Agency

The Major League Baseball Players Association has been a tremendous force for the players. The original collective bargaining agreement made in 1968 raised minimum player salaries from $6,000 to $10,000 and provided players with the right to arbitration to settle grievances. Since then, the MLBPA has re-negotiated the CBA several times, but the most significant contribution of the MLBPA has been its role in developing free agency.

The reserve clause of Major League Baseball allowed teams to reserve the rights to a player for year after his original contract expired. This was created initially to prevent sheer capitalism from taking over the game and allowing the wealthiest teams to purchase the best players. However, the reality of this clause was that it took away any bargaining power from players. Players were left with two options at the end of their

[27] Jake Emen, "Amphetamines: The True Culprit in Baseball."
[28] Jake Emen, "Amphetamines: The True Culprit in Baseball."
[29] Jake Emen, "Amphetamines: The True Culprit in Baseball."

contract: either ask to be released from their contracts (which rarely occurred) or to hold out until after their contract was completed and forfeit a year's pay in the process.

Federal Baseball Club v. National League (259 U.S. 200 (1922)) was brought to the Supreme Court to try and overturn the reserve clause. However, the Supreme Court ruled in favor of baseball. The Court stated that baseball was exempt from interstate commerce because the game crossed state lines by mere incident, rather than purposefully. Baseball would remain exempt from antitrust legislation for the next 55 years until the "Seitz decision" was passed, which effectively ended the reserve clause.[30]

While the "Seitz decision" brought the rise of the current free agency system, the beginnings of such a movement originated with the Curt Flood. Flood was a standout baseball player during his prime both defensively and offensively. During his career he earned seven gold glove awards, batted over .300 six times, and helped his team win two World Series titles as a member of the St. Louis Cardinals.[31] After the 1969 baseball season, Flood learned from a reporter that, without his knowledge, he was bring traded to the Philadelphia Phillies, a terrible team at the time. Flood refused to accept the deal, and wrote a letter to baseball commissioner at the time, Bowie Kuhn, asking to be declared a free agent, which would have undermined the reserve clause. Kuhn rejected the request, and Flood sued.

The case of *Flood vs. Kuhn* went to the Supreme Court where the court ultimately ruled, once again, in favor of baseball. The Court acknowledged that baseball was indeed interstate commerce unlike its Federal Baseball Club decision, but it still ruled against

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[30] Darren Rovell, "The early days of free agency," ESPN.com, accessed April 20, 2011, http://static.espn.go.com/mlb/s/2000/1121/893718.html.
[31] www.baseball-reference.com

Flood and declared the case not a violation of anti-trust laws. And the Court urged Congress to produce appropriate legislation. While Flood did not win the case, the attention that the case caused would ultimately lead to the overturning of the reserve clause. With the Supreme Court showing it would not rule in favor of the players, more players and the general public became aware of the clause and more efforts were done to try and overturn it. Following the National Labor Relations Board adoption of baseball to be under its jurisdiction, the Seitz Decision was made. Andy Messersmith and Dave McNally overturned the clause after both players played throughout their option year in 1975. Because both players had fulfilled their contracts, including the one-year reserve clause stipulation, arbitrator Peter Seitz ruled that the two were free agents and able to sign wherever they pleased. The following year, Major League Baseball adopted a new agreement with the Major League Baseball Players Association that allowed players with six years experience to become free agents.[32]

Free Agency Today

The results of the Curt Flood case and the "Seitz decision" live on today. Today free agency has become one of the most exciting aspects of the baseball season. And it occurs after the season has ended. For many teams, a player's year prior to free agency is a difficult time. Teams are often faced with choosing either to lose the player at the end of the season, or to trade the player before the season ends to be able to get something in return. This is especially true for many small market franchises. The league has tried to

[32] Darren Rovell, "The early days of free agency," ESPN.com, accessed April 20, 2011, http://static.espn.go.com/mlb/s/2000/1121/893718.html.

counteract these difficult situations by setting up a system that compensates teams for the loss of high-end talent to big-market clubs.

The current system of free agency compensation relies on using the amateur draft to compensate teams. Currently there are three types of free agents: Type A, B, and C. Type A free agents require the signing team to surrender its first round pick to the losing team. Additionally, the losing team will receive a sandwich pick between the first and second rounds of the amateur draft. However, if the team that signs the type A free agent is drafting in the top half of the next season's draft, they are exempt from giving up their first round pick and instead must surrender their second-round pick. Type A free agents are categorized as a player that falls into the top twenty percent of his position. Type B free agents are in the next top twenty percent of their position. Signing teams do not have to surrender a pick, but losing teams still receive a sandwich pick between rounds. Type C free agents fall anywhere after type A and B free agents, and type C free-agents do not require any compensation to the losing team.[33]

Recent Bad Contracts

It is worth noting that the worst contracts have signed during this time of great inefficiency and lack of fiscal responsibility in baseball. Over the past decade 23 contacts have been signed that have totaled over $100 million and six-years in length. Of those 23, 13 have been completed or in existence for over four seasons, which allows better analysis. Of those thirteen, seven contracts have been shown to have at least as many

[33] Keith Law, "Explaining Type A, B free agents - ESPN." ESPN.com, accessed November 30, 2010, http://insider.espn.go.com/mlb/blog?name=law_keith&id=2678840.

Figure 1 – Mega Contracts of the Decade

productive years as unproductive years (*see below*).[34]

Player	Years	Productive seasons
Alex Rodriguez	2001-2008	8 of 8
Manny Ramirez	2001-2008	8 of 8
Albert Pujols	2004-2010	7 of 7
Todd Helton	2003-2010	5 of 8
Jason Giambi	2002-2008	5 of 8
Derek Jeter	2001-2010	5 of 10
Carlos Beltran	2005-2010	3 of 6
Derek Lee	2007-2010	2 of 4
Kevin Brown	1999-2005	3 of 7
Ken Griffey Jr.	2000-2008	2 of 9
Mike Hampton	2001-2008	0 of 8
Alfonso Soriano	2007-2010	0 of 4
Barry Zito	2007-2010	0 of 4

Only three players have played out such contracts to 100% productivity: Alex Rodriguez (2001-2008), Manny Ramirez (2001-2008), and Albert Pujols (2004-2010). [Productive season = 400+ plate appearances, OPS+ of 125+, OR 20+ games started, and ERA+ 125].[35] Of all players in 50% or higher productivity range, not a single player is a pitcher. In fact of the three pitchers who fit the sample size, only Kevin Brown has ever produced a productive season.

Of the three above mentioned players Rodriguez and Pujols have been the most productive, and both have ranked as the most valuable players in the league over the last decade (based on Wins Above Replacement rankings). Ramirez has been productive as well, but production has fallen off significantly for Ramirez since 2004, when he turned 32 years-old. Rodriguez and Pujols signed their large contracts at young ages (Rodriguez:

[34] Stark, "Big-money contracts in vogue this offseason."

[35] OPS = On Base Percentage + Slugging Percentage, ERA+ adjusts a pitcher's earned run average (ERA) according to the pitcher's ballpark (in case the ballpark favors batters or pitchers) and the ERA of the pitcher's league. Average ERA+ is set to be 100; a score above 100 indicates that the pitcher performed better than average, and vice versa

25, Pujols: 24), and they have been able to not only be productive throughout their contracts, but also benefit from being able to sign at least two major contracts in their careers: once during their twenties and once more during their early 30s, which is still within the typical peak range of players allowing them to demand contracts well over $200 million.[36]

As mentioned previously, any player playing beyond the age of 35 should not be expected to perform at an elite level. However, most players in MLB reach free agency at ages ranging from 28-32. All players seek not only big annual contracts, but they also seek long contracts with guaranteed incentives. In spite of the facts that players' performance diminishes with age, teams continue to be generous towards the elderly. Assistant GM of the Red Sox, Ben Cherington stated, "You're basically paying a tariff at the back end to get significant production in the early years."[37] While prime production may be valuable, the price of paying for the back ends of these mega-contracts seems to outweigh the benefits. As players continue to decline with so much money owed to them, they become unusable assets. Most importantly, they become undesirable for the team that owns their contract, and they become undesirable for any other team.

Of the contracts listed, only four players have been traded under their contracts. Alex Rodriguez and Kevin Brown were traded to the Yankees, who were largely able to make such trades because of their seemingly limitless budget, which was used to take on the remaining amount of Rodriguez's and Brown's contracts. Manny Ramirez was traded in the final year of his contract at the trade deadline, and he was traded at a time when he was worth very little to most organizations due to his lack of effort for the Red Sox in his

[36] www.fangraphs.com
[37] Stark, "Big-money contracts in vogue this offseason."

final days with the team. Mike Hampton was traded to the Atlanta Braves after two years of poor performance with the Colorado Rockies. The move was largely made for financial reasons as the Rockies were struggling as a franchise, and the trade could not have been made without the Florida Marlins being a mediator and paying for $30 million of Hampton's remaining $90 million left on his contract. Such negotiations are rare, and difficult to pull off unless they involve the New York Yankees. This list may grow in the coming year as Carlos Beltran, Albert Pujols, and Todd Helton all enter their final years of their massive contracts, but if they are traded it will have to be in exchange for less than the contract is worth or with the ability to negotiate an extension with the player before making the deal. However, Helton and Beltran have all seen tremendous declines since signing their contracts, and likely will only be traded to a desperate contending team, if at all.

Such contracts prevent teams from unloading these players, but they also play a huge role in the ability of teams to upgrade their rosters throughout free agency. The Houston Astros have been unable to upgrade their roster since their initial commitment to Carlos Lee. Since signing Carlos Lee to his deal before the 2007 season, the Astros have not made the post-season and have not signed a major free agent. Similarly, the St. Louis Cardinals currently have been unable to re-sign Albert Pujols before his self-instituted deadline, which means he will become a free-agent at the end of the 2011 season. The failure to sign Pujols has been linked to an inability of the Cardinals to pay for his contract, which is expected to at least surpass $250 million in total value with an annual value of at least $25 million. This lack of funds has been linked to the Cardinals' decision to sign Matt Holliday to a 7-year, $120 million deal before the 2010 season. Currently,

the Cardinals serve as the model of poor financial management throughout mega-contracts, with over $72 million of the Cardinals' $93 million payroll tied up in five players.[38] An extension for Pujols that would match the contract of Alex Rodriguez would put those figures at $86 million of $107 million.

Of course the idea of such major contracts is that they should make the signing team better. However, of these mega-contracts that have seen at least four-years of the deal completed, only 4 of the players have played and won the World Series (Barry Zito was left off the Giants' playoff roster). Two of the players played on the same team (Yankees), and only one of the listed players has won more than one (Manny Ramirez) under their mega-contract. Without coincidence, none of the pitchers on the mega-contract list have won a World Series or even pitched in a World Series game. The chances of success for players of such mega-contract pitchers is nearly impossible to predict, and, because starting pitchers do not play every day, their impact on a team's performance is much less noticeable than an everyday player. However, with only four players winning World Series titles and only five players reaching the World Series (Giambi), the purpose of these mega-contracts seems to be lost.

It is not only the mega-contracts that have been shown to be failures for Major League teams either. As a whole, free agency deals seem to not have the desired impact regardless of where the moves are made. Throughout an analysis of the top three-tiers of the past four free-agency periods (2006-2009) of free agents (defined by the top contracts in total value) the following was found[39] [40]:

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[38] "MLB Baseball Roster Analysis." ESPN.com,
[39] ESPN. "MLB Baseball Free Agent Tracker ."
[40] Full lists can be seen in Appendix C

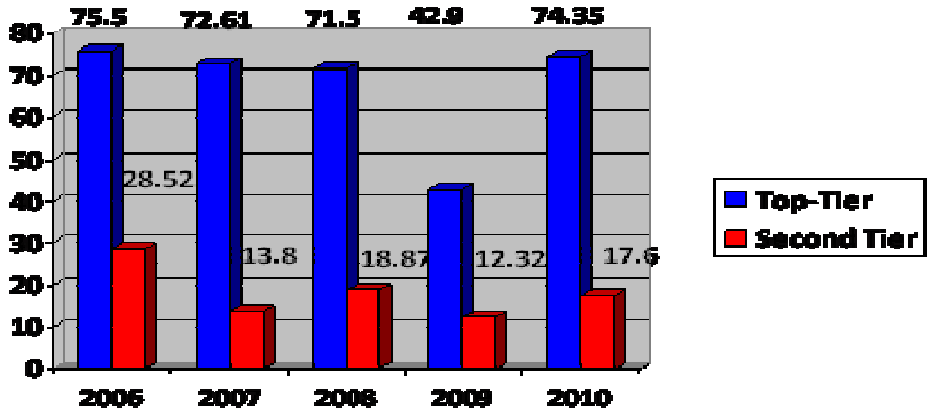
- Only twenty out of a possible 120 players made an all-star team ever during their contract period.
- Only 9 of these all-stars came from the top-10 of their free-agency class
- Of those twenty players only four were selected to multiple all-star games under their contracts signed (Alex Rodriguez, Alfonso Soriano, Mariano Rivera, Francisco Cordero).
- All four of the players with multiple all-star appearances came from the top tier of their free agency class.
- Of the four multi-year, All-Stars: Rodriguez and Rivera are Hall-of-Fame Candidates
- The average top-tier total salary was $64,628,000 and 4.5 years, coming out to an average, annual salary of $14,665,000
- The average second-tier total salary was $18,381,000 and 2.5 years, coming out to an average, annual salary of $7,427,000
- Of the 40 top-tier players, 23 played on playoff teams … 21 from the second-tier
- Teams with the most signings of top FA's: Yankees (10), Red Sox (8), Cubs (7), Phillies (6), Dodgers (6), Angels (6)

This means that in a free-agency period, there is a less than 17% chance that one of the top 30 free-agents will be an all-star in the future, and it means that there is a less than 5% chance that a player signed via free agency will be selected to more than one all-star team. And that if one is to sign a multi-year all-star; the signing will have to be made throughout the top tier of free agency. But even then the odds of success are lower than the numbers suggest. Two of the best free-agent signings from the top-tier have Hall-of-Fame credentials, signaling that they are extraordinary players. Two of these four players are also closers (defined as pitchers who primarily pitch in save situations), which is widely considered to be one of the most volatile and easiest positions to fill. This means that it is even less likely that one will be able to sign a "franchise" player throughout free-agency. Of the players from the top-two tiers, over half of them played for 6 clubs. Not

coincidentally all six clubs have been ranked in the top-ten payrolls in baseball, and all six clubs have been to the playoffs multiple times over the same time span.

As the saying goes, "the rich get richer." It indeed seems to be the case throughout the following analysis, but it also shows that these investments do not necessarily pay-off in the ways that they were meant to. The likelihood of signing a future all-star from the top-tier of free agency is 7.5%. Considering that the average top-tier free agent makes over $14 million per season for, on average, 5 years is troubling for any team making such an investment. Furthermore, these players are incredibly unlikely to make more than one all-star team, which is all the more troubling for any team making such a commitment to a player. However, the comforting factor for any team that gives the most expensive contract of the off-season is that that player would go on to become an all-star. While this data sample is small, it is exemplary of the spending habits that have occurred in baseball recently. The graph in figure 2 shows that the spending habits have dramatically changed in the 2009 off-season, but the 2010 off-season has put baseball right back in line with its previous spending habits. Therefore, it seems that 2009 was more a result of a weak free-agent class than any type of shift in financial spending.

Figure 2 - Average Price of Free Agent Contracts



The Advantages of Younger Players

Younger players come with two key advantages over their older counterparts: cost and potential. Because of Major League Baseball's collective bargaining agreement players are not eligible for free agency until after six full seasons of major league service. If a player's contract runs out during this time period, he is allowed to re-negotiate his contract with his team, but if a price cannot be agreed on, salary arbitration will be instituted. Salary arbitration rulings generally work in favor of teams, but there have been a few of cases of players who have broken the bank throughout salary arbitration. However, the general consensus with top-level talent is to negotiate a contract throughout arbitration years at a heavily discounted price. Typically, for a budding super-star, these pre-free agency contracts generally are worth less than $30 million total over the course of 4 – 5 years. For a lower caliber player, the price tag will come down. Such contracts work in favor of management as teams are able to benefit off of reduced prices on players, and players are forced to agree to terms as salary arbitration rarely rules in favor of them.

With discounted prices, teams also gain a huge benefit from having players under their control for six years. Because of the current collective bargaining agreement, players cannot leave their team if they are tendered until they become free agent eligible. This current model is especially preferable for teams that are low in financial resources. The Oakland Athletics, Florida Marlins, and Tampa Bay Rays have served as models for the past decades as organizations that have relied on young talent in order to build competitive ball clubs. These young, talented players are rarely retained and re-signed when they hit free-agency. In fact, of every all-star that each of the three teams above has

had over the past decade, only one player has been given an extension guaranteed beyond his arbitration years, Hanley Ramirez of the Florida Marlins. However, these three teams have appeared in the playoffs seven times. The Florida Marlins won the 2003 World Series, the Rays went to the 2008 World Series, and the Oakland A's have appeared in the post-season four times over the past decade. These three teams have also sat in the bottom half of payrolls every season for the past decade.[41] These teams serve as the model of efficiency, and they have done so by emphasizing youth, and selling high on players' potential.

[41] "2011 MLB Salaries by Team - USATODAY.com." USATODAY.com, accessed March, 31, 2011, http://content.usatoday.com/sportsdata/baseball/mlb/salaries/team.

Chapter 2 - Regression Analysis

To analyze the effects of the various variables mentioned previously, a multiple regression analysis will be used across five separate variables. The independent variables will be analyzed for the ability to predict the outcome variables of the study. The purpose of the regression analysis is to analyze various variables and see how important they are toward the financial and on-field success to a team.

Independent Variables

Age

The first variable that will be analyzed is the average age of major league teams. Age is the most obvious indicator of the youth movement. Aside from being an indicator of youth, age is also an indicator of the types of players that are signed to baseball organizations. Because of the collective bargaining rules within baseball, a player must have accumulated at least six years of service time on a Major League roster. The average age of a rookie in Major League Baseball during the past decade was approximately 24 years of age. Under this average age, the average free agency eligible age for a player over the last decade would correspond to being approximately 30 years of age. Therefore, teams that are heavily reliant on acquisitions of free-agents will employ a higher average age than that of teams that rely on prospects.

Under the current Major League Baseball rules, the active roster of a team is set at 25 players until September first of every season. On this date, teams can expand their rosters up to 40 players for the active roster. However, for the purposes of this study, age

data sets will be analyzed according to the opening day, 25-man rosters. The rationale for this is that the increase to 40-man rosters almost always is done by the promotion of minor league players to the major league club. Because minor league players tend to be on the younger side of the age scale, the September call-ups tend to bring down the average age of baseball teams. Furthermore, the original 25-man, opening day roster is the core group of players that are expected to make it throughout the entire 162-game season for a Major League club. This would imply that they are the most valuable to the organization for their overall success, and, therefore, they will have the greatest impact on the team's success.

The average age of teams will be acquired using data from ESPN.com

Number of Players Acquired Throughout Free-Agency

While age can be an indicator of free-agent-eligible players, it is not a perfect indicator. The age variable also takes into consideration the fact that age itself has its role in success. However, the actual number of free-agent acquisitions on Major League rosters can provide a more accurate indicator of the effect of free-agency. Also, not all free-agents have to have served 6 years of playing time at the Major League level in order to be eligible for free-agency. International players do not have to abide by the same rules as American players. Players from foreign countries are granted free-agent rights immediately upon their ability to enter the Major Leagues.

Different international baseball bodies have different rules for the transition to the American game, but ultimately players from foreign countries can become eligible for free-agency at a younger age than the typical American baseball player. An example of this is players who come from the Domincan Republic and surrounding Caribbean

region. Players such as Miguel Cabrera of the Detroit Tigers can be signed as free-agents at as young as 16 years-old. After signing, these players can either come to America to play in the American system (typically in the minors), or, more commonly, these players will stay in the Caribbean to develop within their signing team's own training facilities until they are ready to play in American leagues.[42] Across the Pacific, the ability to sign foreign players is much more difficult. While the Caribbean is practically unregulated, Asian baseball players typically require more financial investment. Because of the existence of established, money-making professional leagues in Asia, Major League teams must buy out the contract of a player from his Asian-league team. This process typically operates like an auction, with the Asian team accepting the highest bid. From there, a player is then given a short window to negotiate a contract with the Major League team, and sign as a free-agent. The most expensive Asian player signed to a Major League team was Daisuke Matsuzaka of the Seibu Lions in 2006. The rights to negotiate with Matsuzaka were sold to the Boston Red Sox with a bid of $51.1 million (nearly three times the Seibu Lions' payroll that year), and Matsuzaka signed a contract with the Red Sox worth a guaranteed $52 million in 2006.[43] Matsuzaka's signing with the Red Sox is an extreme example of the negotiations that can take place with Asian teams, which is generally why Asian players are not recruited at a high rate to Major League Baseball.

Another exception can come with non-tendered free-agent players, who are players that are ineligible for free-agency, but are not tendered contracts by their club

[42] Jorge Aranguré Jr. and Luke Cyphers, "It's hard to argue with the Dominican baseball system - ESPN The Magazine," ESPN.com, accessed April 15, 2011, http://sports.espn.go.com/espnmag/story?id=3974952
[43] ESPN, "Matsuzaka, Red Sox reach agreement on six-year deal." ESPN.com, accessed April 20, 2011, http://sports.espn.go.com/mlb/news/story?id=2696321

after their contract has expired. This is rare, and is especially rare to see with star players. However, the important thing to be noted in analyzing the number of free-agent acquisitions is the fact that a team is choosing to acquire talent outside of its own organization. Such a transaction shows that the organization was unable to find a better player within their own organization, and they decided the best course of action would be to sign a player from the outside of the organization.

Data for this variable was done throughout an analysis of player histories for every player on a Major League opening day roster through baseball-reference.com and ESPN.com.

Number of All-Star Players

The number of All-Stars on a single Major League Roster is indicative of the quality of talent that exists on a team. These players also tend to be the players that can demand the most money during free-agency. But this variable is under analysis primarily to distinguish the importance of All-Star players on the ability for a team to be successful financially and competitively. All-Stars are the players that teams will market behind and use to sell tickets and merchandise. All-Stars are the players on a franchise who sell the most jerseys, shirts, posters, etc. They are generally the most popular players of a franchise, and they are generally perceived to be the most predictive of a team's success.

However, as mentioned earlier, the quantity of All-Stars does not always indicate the success of a team on the field. Therefore, this analysis can also help shed some light on the importance of individual talents toward the success of a team.

However, there are some limitations to this variable. The first limitation is that the Major League Baseball All-Star game requires that every team be represented in the

game. This has resulted in some controversy as some teams that have been unsuccessful must still have an All-Star on their team. Such a system has ultimately led to the exclusion of statistically high-performing players for players that needed to be selected to meet the game's rules. Another limitation is the size of rosters for All-Star teams. As of 2010, All-Star game rosters got to be expanded to 33 players from the previous number of 32. While this is a greater number than the active rosters of regular season teams of 25, there have been complaints that the size of the roster leaves out many deserving individuals.

Finally, the last limitation is that all starting position players of the All-Star game are selected by fan vote, and not by their statistical performance. This voting system has lead to statistically undeserving players getting to not only start the All-Star game, but also be selected to the All-Star game. A popular example of this has been the selection of Ichiro Suzuki to the American League All-Star game every year of his ten-year career. While Ichiro has been deserving of this honor, he has been a leading vote-getter several years because of his monopolization of the Japanese population both in the US and abroad.

For the purposes of this study, All-Star data will only be extracted from the 2010 season, and not previous seasons. This is intended to control for the effect of a single player receiving multiple All-Star selections, and, therefore, creating the illusion of multiple All-Star players for a team. Also because the dependent variables are for the 2010 season, the "best" players of the 2010 season would theoretically be on the 2010 All-Star teams.

Number of Transactions per a Season

This variable is intended to analyze the effect of managerial intervention on a team from season-to-season and over the course of the season. Because of the differing philosophies within baseball today, it is important to evaluate the efficacy of these different ideologies.

The number of transactions per a season will include all transactions made over the course of a season beginning at the end of the 2009 World Series to the beginning of the 2011 Major League Baseball season. This time frame will include transactions that occur both before and during the course of the 2010 baseball season, and the following off-season. The inclusion of the winter of 2011 is to correspond with the data of operating income, which incorporates the most recent off-season in its projections of Major League Baseball finances.

A transaction will be defined as the trade of a player, the signing of player throughout free agency, the claiming of a player through waivers, promotion of a player from the minor leagues, and any other similar transactions that involve the acquisition of a Major League level player. Minor league player acquisitions will not be included in this variable except for those acquired throughout trades. This means that players selected in the 2010 Major League Baseball Amateur Draft will not be included unless they made the Major League team during the same season. The number of players involved in a trade will not be counted toward the variable. All trades of players will be treated as a single transaction as players are often traded in unbalanced numbers.

Transactions data will be acquired through the use of mlbtraderumors.com's transaction tracker tool.

Payroll

Team payroll expresses the amount of financial investment placed in a team. Theoretically, high payrolls should express the quality of talent that exists on a major league team, which should, therefore, express the success of a team. Of course, this has been shown to not always be the case. Team payrolls also can be indicative of the amount and quality of free-agent talent on a team. The most talented free-agents demand the most money, and therefore a larger payroll can be indicative of this. By the same logic, payrolls are also indicative of a team that relies more heavily on younger talent, as a lower payroll could indicate.

Payroll data has been acquired through *USA Today*.

Dependent Variables

Winning Percentage

Winning is the most obvious indicator of on-field success. The choice of winning percentage lies in its ability to incorporate both wins and losses into a single statistic. In general terms, a team is considered to be very successful if it is able to maintain a winning percentage of at least .500. This means that a team that has won at least 50% of its games is considered to be successful, by the general population of baseball observers.

However, Major League Baseball's playoff system only incorporates eight total teams from all of Major League Baseball's 30 teams. In fact, for 2010, the lowest winning percentage of a playoff team was .556 (Texas Rangers), which equals a record of 90 wins and 72 losses, or nine games over a 50% winning percentage. Therefore, it seems unfair to assess a team's success based solely on their playoff eligibility.

Operating Income

The use of operating income is to show profit margins for Major League Baseball teams. Revenue is a misleading and biased statistic that favors big market teams such as the New York Yankees and New York Mets. Team value is also a biased indicator because of various team assets that can lead to a high value (i.e. new stadiums) and the location of team can also play a huge role on the value of an organization. Operating income is defined by the following equation:

Operating Income = Gross Income – Operating Expenses – Depreciation

All earnings are calculated before interest, taxes, depreciation and amortization. In the case of a baseball organization, operating income will take into account total revenues minus expenditures such as payroll expenses, stadium operating costs, etc. All operating income figures will be taken from *Forbes Magazine's* projections of operating income before the 2011 Major League season. *Forbes Magazine's* projections are based off of the finances of Major League teams from the previous season (in this case, 2010). This makes the 2011 projections correspond directly to the data that is being collected on the 2010 season, and the projections incorporate the expenditures made by a team in the off-season (i.e. free agent signings).

When considering the emphasis on youth and young talent, and the decline of aging players, the expectation of the analysis is that age will have a negative relationship with winning percentage. That is that younger teams will have higher winning percentages than older teams. On the operating income, the expectation with age will be that younger teams will also be more profitable. Meaning that age will also have a negative relationship on profitability.

The number of All-Stars on a team roster is expected to have a positive relationship on team performance and profits. Star players are given that designation because of their contributions to their team. Therefore it is almost intuitive to expect the teams with the most All-Stars to perform the best. All-Stars are also among the most well known players in addition to their success. This makes them the most marketable players, and should make result in making their teams profitable.

The number of free-agent acquisitions on a roster is expected to play negatively toward the winning percentage of a team. Multiple acquisitions throughout free-agency imply that there is a weak prospect development system. While some teams can afford to fill their team with highly successful free-agents, there are only a select few in each free agency class. This means that the rest of the free-agents acquired will not be able to perform for their team. Because of their lack of marketability and on-field success, it seems unlikely to expect a positive relationship on team operating income.

At the management level, total number of transactions are expected also have a negative impact on winning percentage. While higher caliber players may be acquired throughout trades, the rarity of such transactions makes it unlikely that a high volume will have a significant impact. Also because major transactions of star players generally require prospects, who will not make an impact at the major league level, the positives of a star player will be cancelled out.

Payroll is expected to have a positive impact on team winning percentage. While there are some teams that are ultimately successful with modest payrolls, there are several teams that are successful with high payrolls. Furthermore, there are several teams at the bottom of the payroll pyramid who may eventually become competitive, but these teams

are not ready to compete yet. Because of the concept of building teams in windows, not all teams that have small payrolls can be expected to succeed at the same time. However, payroll is hypothesized to have a negative impact on profitability. Because of the significant costs of high payrolls, plus the costs of stadiums and other operating costs, teams must generate a huge amount of revenue to cover their losses.

Chapter 3 - Results

Based on the results from the regression analysis for the dependent variable of winning percentage the following was found. Across all five variables of analysis the total variance accounted for yielded an adjusted R-square value of .511. The number of All-Star players significantly predicted winning percentage, ß = .705, $t(24) = 4.490$, $p < .01$. This finding was not surprising as the best players in the league should make an impact on team performance. Such a finding is more intuitive than anything. Age displayed, ß = .351, $t(24) = 2.248$, $p < .05$. This finding was contradictory to the predictions made at the beginning of the experiment. It was believed that youth would be the key to success, but the results indicate that older players have a significant positive impact on a team's winning percentage. Finally, the last significant finding was within the transactions variable, ß = -.313, $t(24) = -2.164$, $p < .05$. The more transactions made by a team over the course of one year actually had a negative impact on the team's performance.[44]

When looking at the operating income dependent variable, the regression analysis produced an adjusted r-sqaure value was -.029. This indicates that there is a great deal of explanatory data missing from the model, which also indicates that the variables chosen do not have any significant impact on the outcome variable (operational income). None of the independent variables were significant at the .05 significance level. The results of this variable analysis are not surprising though. Looking at the data for operational income, the distribution is scattered across the board. The data for operational income seems to indicate that other factors are at play besides the variables listed for analysis. An

[44] All results listed in Appendices A and B

example of this is seeing a small market team like the Oakland A's, who enjoyed modest success in 2010 (winning percentage of .500), but play in one of the worst stadiums in baseball. The A's posted a very profitable season according to operational income at $23.2 million, which was greater than some big market teams. The New York Mets posted a negative operating income of - $6.2 million. The Atlanta Braves posted a winning percentage of .562, had 10 more wins than the A's, and made the playoffs, but had an operating income of $22.2 million. [45]

The results show that more analysis is required on the financial side of baseball, and that there is still more variance to be accounted for within winning percentage. But the financial side is the most intriguing because it shows that team performance seems to have very little impact on team profitability, and the amount of money invested in a team payroll also seems to not show profitability. The latter is particularly interesting because bigger payrolls generally signify more generous owners, which has generally translated to better ballpark experiences for fans.

The data was also analyzed throughout correlations between the independent variables to investigate possible relationships between variables. Throughout the correlation analysis of independent variables, significant correlations were found between: age and payroll (.513), free agent acquisitions and payroll (.559), and number of all-stars and payroll (.444). This data supports the previous assumptions made about payroll and its effect on team management. Higher payrolls allow teams to purchase free-agent, All-Star, players, who are generally older. And, obviously, more acquisitions yields more dollars spent on payroll.

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[45] Forbes Magazine, "Forbes Valuations of the 30 Clubs in MLB," accessed March 31, 2011, http://www.bizofbaseball.com/index.php?option=com_wrapper&Itemid=126

Chapter 4 - Discussion of Results

The use of the regression analysis was meant to evaluate various variables that play economic roles in Major League Baseball team management. Looking at the regression data for a team's winning percentage, the five variables under analysis account for just under 60% of the variance in team winning percentage. The most important factors that played into this percentage were the number of all-stars present on a team, the average age of the team, and team payroll.

The number of All-Stars present on a Major League roster played the most significant role in determining the amount of variance in winning percentage. This finding seems fairly logical. As All-Stars are selected based on their performance during the season, it makes sense that the more All-Stars present on a team, the better the team will perform on the field. For the 2010 baseball season, the teams that were the most represented at the All-Star Game were: the New York Yankees (8), Atlanta Braves (6), Boston Red Sox (6), and the Texas Rangers (6). All four teams performed at winning percentages over .540, which translates to 87.48 wins over a 162-game season. Three of these four teams made the playoffs during the 2010 season, with the Texas Rangers making the World Series. If the data is expanded, one can see that twelve teams had 3 or more players represented on an All-Star team in 2010. Of that twelve, ten teams had winning percentages of .500 or higher, and six of the eight playoff teams fell in this group. No playoff team made the post-season with only one All-Star on their roster.

There are some possible confounds with the use of All-Stars as a variable. Because of the team nature of the sport, players can benefit from being surrounded by other successful players. A recent of example of this came in 2009 when Matt Holliday

began his season with Oakland A's before being traded to the St. Louis Cardinals at the mid-season trade deadline. Holliday was traded to the Oakland A's after the 2008 baseball season, in which he made his third consecutive all-star team. However, upon being traded to the Oakland A's, Holliday's production fell off. Oakland's roster was lackluster throughout the season. The team finished in the bottom half of the American League in every offensive production category and the team finished with a record of 75-87 and finishing in last place in the American League West. Holliday performed at underwhelming levels and was not selected to the 2009 All-Star game. Upon his arrival in St. Louis though, he returned to his perennial All-Star form. Despite playing in 30 less games and having 111 fewer at-bats, Holliday out-performed his production in Oakland in nearly every offensive category. The St. Louis Cardinals were in competition for the playoffs when they acquired Holliday, and the team had an impressive roster of three All-Star players, two Cy Young Award finalists, and National League MVP, Albert Pujols. The Oakland A's sported a roster of overall mediocrity. The A's had only one All-Star in 2009, closer Andrew Bailey, and the team had played itself out of playoff contention before July 1st.

Figure 3 - Matt Holliday 2009 Stats[46]

Tm	G	AB	R	H	HOMERUN	RBI	SB	BA	OBP	SLG	OPS	OPS+	TB
TOT	156	581	94	182	24	109	14	0.313	0.394	0.515	0.909	139	299
OAK	93	346	52	99	11	54	12	0.286	0.378	0.454	0.831	119	157
STL	63	235	42	83	13	55	2	0.353	0.419	0.604	1.023	169	142

Another confound within this variable is that All-Star game starters are subjected to fan vote and player vote. As mentioned earlier this allows a player to be selected to the

[46] www.baseball-reference.com.

All-Star game by popularity rather than production. This often occurs in instances where a recognizable player plays for a strong baseball club. An example of this was the selection of Jason Varitek to the 2008 All-Star game. Despite hitting .218 in the first half and collecting more strikeouts than hits, Varitek made the All-Star team by the vote of his peers. Varitek's reputation from previous seasons as one of the best catchers in baseball and catching for the Boston Red Sox, earned him the support and votes of his peers. But his selection is widely considered to be one of the worst All-Star selections in recent memory.[47]

As was also mentioned before, the mandatory requirement of every team having an All-Star representative also creates a possibility of confounds. If such a rule were eliminated, it is possible that the variance in winning percentage accounted for by the number of All-Stars would be even greater.

Surprisingly, age had the opposite relationship to the variance in winning percentage. It was hypothesized that younger ages would be a predictor of team winning percentage, but it turned out to be the opposite. The older a team was, the better on-field performance could be expected. The five oldest teams in Major League Baseball for the 2010 season were: the Philadelphia Phillies (30.67), Boston Red Sox (29.95), Toronto Blue Jays (29.89), Houston Astros (29.79), and the New York Yankees (29.65). Four of the five mentioned teams posted winning percentages over .500, with the Yankees and Phillies making the postseason. The five youngest teams in Major League Baseball were: the Pittsburgh Pirates (26.99), Florida Marlins (27.33), Texas Rangers (27.67), Tampa Bay Rays (27.77), and the Arizona Diamondbacks (27.80). The Texas Rangers and

[47] John Donovan, "Thoughts on this year's All-Star selections," *Sports Illustrated,* accessed April 20, 2011, http://sportsillustrated.cnn.com/2008/writers/john_donovan/07/07/donovan.allstarreact.

Tampa Bay Rays both made the playoffs and entered the post-season. However, the Pittsburgh Pirates were the worst team in baseball winning only 57 wins in 2010.

When looking at the average ages of these teams it can be seen that the average age of the youngest teams in major league baseball all fall below the typical free-agency starting period. This means that these teams have the fewest free-agent acquisitions of all teams, which is supported by the fact that all five of the youngest teams had the fewest free-agent acquisitions on their ball-clubs. Conversely, the oldest teams had almost twice as many free-agent signees on their rosters. Furthermore, the youngest teams possessed the cheapest payrolls while the oldest had the most expensive payrolls.[48]

These results indicate that the model of poor teams is to rely on younger talent, not dip into the free-agency pool, and, if so, sign cheap free-agents and not top players. This model of management is the most fiscally conservative method of action, unlike the wealthy teams. These teams rely much less on their own talent development, and these teams rely on free-agent players to build their rosters. This analysis also shows that this method of business is the most successful style of management for on-field success, as the oldest teams posted over 56 more combined wins than the youngest teams.

While some of the younger teams have been successful (Texas and Tampa Bay), others have not (Pittsburgh and Arizona). These discouraging results show one of the most important factors to note when looking at the value of young players; there is no proof that they will be successful at the Major League Level. The Pittsburgh Pirates have drafted in the top half of the draft every year for the past decade, drafting in the top ten picks eight times. Going back further, the Pirates have drafted outside of the first half of

[48] Appendix A

the baseball draft once since 1993.[49] This means that the team has had the opportunity to draft the most talented players of the draft sixteen times. Of these prospects, not a single player has made an All-Star game. Once again going further, looking at the top five picks made the Pirates in every draft since 1993 (totaling 85 players), only two players drafted by the Pirates have been All-Stars, and neither made an All-Star team as a member of the Pirates. Comparatively, the Tampa Bay Rays have only drafted players since 1996, but have produced three Major League players that made the All-Star team for the Rays.[50] The Rays have also produced more major league level players in the same comparison with 31 to the Pirates' 23. The Rays have been very successful in their drafting and player development process, and the Pirates can be considered to be abnormally bad with their drafting and player development. However, the two teams' opposite fates show how much chance exists in the talent development process.

Finally, the results of payroll are not surprising when considering that throughout the correlation analysis it was found that the number of all-stars on a team and payroll exhibited a positive relationship of .444. All-Stars demand large salaries. While it was shown earlier that the probability to sign an All-Star throughout free-agency is low, especially a repeat All-Star, rich teams often times are able to retain their All-Star players, preventing them from walking to free-agency. For example, Miguel Cabrera has never been a free-agent because he was signed to a large extension by the Detroit Tigers before he was eligible for free-agency. Cabrera will get to test free-agency for the first time in 2016 when he is 32, which will be 14 years after he began his career. Joe Mauer

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[49] "Pittsburgh Pirates Draft History," The Baseball Cube, accessed April 20, 2011, .http://www.thebaseballcube.com/draft/teamsDraft.asp?T=23.

[50] "Tampa Bay Rays Draft History," The Baseball Cube, accessed April 20, 2011, http://www.thebaseballcube.com/draft/teamsDraft.asp?T=28.

also signed a major extension with the Minnesota Twins prior to the 2010 season, which will prevent him from testing free agency until 2019.

When looking at operating income, it is clear that there is very little predictability that is controlled by management and players. Player performance was shown to very little impact on a team's operational income. This finding was particularly surprising, considering that team's emphasize star players to market teams. Furthermore, under the correlation analysis, winning percentage and operating income were shown to have a very weak correlation (.059). This result indicates that there is little relationship between on-field success and financial success. While surprising, these findings make sense when looking at attendance data for 2010. Two of the bottom five teams in attendance (Oakland and Toronto) performed with winning records in 2010 and, on average, filled their ballparks to approximately 40% capacity. The New York Mets averaged 77.8% capacity attendance despite a .488 winning percentage over 2010.[51] Ticket sales typically account for at least 70% of team revenues. Without sales, teams cannot increase their profit, which means that they cannot acquire greater talent throughout free-agency or resigning existing talent.

A huge factor for teams at the bottom of attendance is not their performance, but their stadiums. The Oakland A's, Toronto Blue Jays, and Florida Marlins (who finished one game below .500) play in three of the oldest stadiums in baseball. The Oakland Coliseum is the oldest stadium in baseball that has not undergone serious renovations (Dodger Stadium and Angel Stadium) or is not a historical landmark (Wrigley Field and

[51] ESPN, "2010 MLB Attendance - Major League Baseball," ESPN.com, accessed April 20, 2011, http://espn.go.com/mlb/attendance/_/year/2010.

Fenway Park).[52] Dolphin Stadium (where the Marlins play) and the Oakland Coliseum were ranked by *Forbes Magazine* as the two worst ballparks in baseball. On the opposite side of the spectrum, the Yankees and Phillies play in two of the most popular parks, which are also two of the newest baseball stadiums in the league. The New Yankee Stadium is also the most expensive baseball park ever built at over $1 billion.[53]

The results leave us supporting the model of the big-market teams. The data indicates that older, star-studded, wealthy teams perform the best on the field and, based on the model of analysis, they perform the best in the profit margins as well. Such results support the model of capitalism and free-market economies that baseball emphasizes. If a team has an abundance of financial resources, they will be able to buy the best players via free-agency, keep their top players throughout resigning, and they attract the most people to their games, which keep their financial resources plentiful. Small-market teams need to stick with their model of fiscal frugality and youth development. Some teams have developed successful variations of this model (Oakland and Tampa Bay), but such a model only gives a team windows of success. No team over the past decade has been able to replicate the sustained success of the New York Yankees with such limited financial resources.

Another hope for these small-market teams is the construction of a new ballpark. This model has turned the Minnesota Twins from a small-market team to mid-sized franchise. With the opening of Target Park in 2010, the Twins were able to up their

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[52] "Ballparks of Baseball," Ballparks of Baseball, accessed April 20, 2011, http://www.ballparksofbaseball.com.

[53] Zack Greenburg, "America's Best Baseball Stadiums - Forbes.com," Forbes.com, accessed March 1, 2011, http://www.forbes.com/2009/04/14/best-baseball-stadiums-lifestyle-sports-baseball-stadiums.html.

payroll to $97.5 million from $65 million the year before.[54] With the opening of Target Park, the Twins signed All-Star catcher Joe Mauer to a $185 million contract extension, the richest contract ever signed by a catcher. The Twins also generated an operating income of $26.5 million in 2010, while upping their franchise value to an estimated $490 million (up $85 million from 2009).[55] However, the A's and Rays both currently are struggling to gain enough support to fund new ballparks, in spite of their success. With the current economic downturn and the struggling real estate markets, it seems unlikely that either team will be able to begin build a new ballpark for several years.

Future Research

For future research, it is recommended that research be conducted to further analyze the importance of ballparks toward the financial success and prosperity of franchises. Future research should also be directed toward finding more meaningful predictors toward the economic success of teams (operating income or other measures). Such research will be invaluable toward the future of the business of Major League Baseball.

Individual analysis of player performance and age, independent of team performance, would be interesting to see the true value of young players within the greater context of baseball. While the results of this analysis indicate that younger players seem to be more useful as financial relief, future research may indicate otherwise.

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[54] USATODAY. "2011 MLB Salaries by Team," USATODAY.com, accessed March 31, 2011, http://content.usatoday.com/sportsdata/baseball/mlb/salaries/team.

[55] Forbes Magazine, "Forbes Valuations of the 30 Clubs in MLB," accessed March 31, 2011, http://www.bizofbaseball.com/index.php?option=com_wrapper&Itemid=126.

Finally, future analysis should be directed toward management itself. Future research should focus on the characteristics that make management successful. Such characteristics would include financial characteristics, but also personal qualities that have allowed certain general managers to stay successful. It would be interesting to see how management approaches player development as well. Such an analysis would provide insight into why certain teams continuously produce excellent players and why others seem to fail.

Chapter 5 - Case Study: All-Star for Prospect Trades

No organization can be successful without successful players. These teams have had several all-stars come throughout their organizations, and, as mentioned earlier, they almost always leave the team during free-agency. But the business model of these organizations is to let these players walk, or if possible, trade them before they hit free-agency. Under the current collective bargaining agreement, teams are compensated for the loss of top players with draft picks. While the one-to-one addition system seems fair, teams often times attempt to try to exchange star players for multiple prospects. Over the past five seasons this trend has become increasingly frequent. Players that are on their way to free-agency are often times flipped for prospects in one-for-three/four/five player deals. These trades are often made to competing teams looking to try and add the missing piece to the championship puzzle. However, the question is how successful is this strategy? Teams that have gutted their farm systems for the prize of the trade market have rarely become the winners of the baseball season.

C.C. Sabathia: Traded from the Cleveland Indians to the Milwaukee Brewers

CC Sabathia was traded from the Rangers to the Milwaukee Brewers during the final season of his pre-free agency contract as the Brewers were preparing to make a run at the post-season. Sabathia was electric in Milwaukee, posting a 10-1 record over 16 starts[56] and pitching heroically on short rest for the final two weeks of the season. Milwaukee made the post-season, but the Brewers were eliminated in the first round of post-season play. Sabathia walked on to free-agency and signed with the New York Yankees. Under the terms of the original trade, the Brewers dealt four prospects, one

[56] ESPN. "CC Sabathia Stats, News, Pictures, Bio, Videos," ESPN.com, accessed April 20, 2011, http://espn.go.com/mlb/player/_/id/4553/cc-sabathia.

(Matt LaPorta) was ranked among the best prospects in baseball, to the Cleveland Indians for Sabathia. LaPorta was the 7th overall pick of the 2007 amateur draft and will be 26 years old heading into this season. LaPorta's career has hardly been of note. LaPorta has yet to play in a full-season and has not come close to putting up noteworthy numbers.[57] LaPorta still has time to develop into a good player, but the odds of success seem to dwindling. The lack of success for LaPorta seems to indicate that the Indians have lost in this deal. However, the Brewers may come out as the ultimate losers as they lost not only the players they traded for Sabathia, but Sabathia himself in exchange for unproven, unpredictable talent through compensation picks.

Johan Santana: Traded to the New York Mets from the Minnesota Twins

Johan Santana was once considered to be the unquestionable ace of Major League Baseball. Santana burst onto the scene as a success at the age of 24 when he posted an impressive 3.07 ERA, with an equally impressive 12-3 record for the Minnesota Twins in 2003. Following that season he would continue for four more seasons of pure dominance, winning two Cy-Young Awards, leading the league in strikeouts three consecutive years (2004-2006), averaging 17.5 wins, averaging 6.35 wins above the replacement level per season,[58] and capturing the Major League Pitching Triple Crown (leading the league in wins, ERA, and strikeouts). In spite of his great success, the Minnesota Twins were still a small-market team, with limited resources and a payroll of $71 million, and the Twins elected to trade Santana before his final contract year in 2008.

The New York Mets outbid the Boston Red Sox and traded four prospects to the Twins: Carlos Gomez, Phil Humber, Deolis Guerra, and Kevin Mulvey. The Mets were

[57] www.baseball-reference.com.
[58] www.baseball-reference.com

also able to sign Santana to an extension of six years and $137.5 million as a part of the deal. The results of this trade are not encouraging for the Minnesota Twins. While the Twins have still maintained a playoff competitive club, their sustained success has not been the result of their haul from the Santana deal. Only Guerra is still with the Twins organization, but he has not made it to the Major League level yet. In fact, only one player (Gomez) has managed to spend an entire season at the Major League level. Of the four players combined they have produced a combined Wins Above Replacement value of 1.4 for 2010, and none of them are highly regarded for the future at this point. Santana has gone on to pitch three seasons for the Mets. Santana has been overall a successful pitcher, posting a Wins Above Replacement value of 4.8 over his three seasons. However, Santana has been plagued with injury issues throughout his time with the Mets, and he has had the dissatisfaction of playing for a struggling franchise in the New York Mets, who have not made a post-season appearance since acquiring Santana. But the results speak for themselves, Santana has been infinitely more valuable to the Mets than any of the prospects that he was traded for.

Curt Schilling: Traded from the Arizona Diamondbacks to the Boston Red Sox

Curt Schilling's career in Arizona had resulted in their World Series title in 2001, but, following their title run, the Diamondbacks began regressing almost immediately. With Schilling's contract set to expire after the 2004 season, the Diamondbacks began looking to trade the Cy-Young Award winner in exchange for talent to rebuild the club. The Boston Red Sox stepped in and offered a package of pitchers: Jorge De La Rosa, Brandon Lyon, Casey Fossum, and prospect Michael Goss.

The Red Sox can be labeled the clear winners of this trade. Six years later, not a single player involved in the trade is still with the Diamondbacks. De La Rosa has developed into a promising pitcher, but he now pitches for the Colorado Rockies after a series of dealings. Lyon would serve in the bullpen adequately, but never at an elite level. Fossum and Goss can be labeled as busts. On the other hand, Curt Schilling would lead the Red Sox to their first World Series title in 86 years in 2004, pitching heroically throughout a serious ankle injury that bled throughout his sock during Game 2 of the World Series. He would then go on to lead the Red Sox to another World Series title in 2007, sealing his Hall-of-Fame resume. Schilling will most likely be a first-ballot Hall-of-Famer when his name comes up for election in 2012.

Billy Beane and the Oakland A's: The Master Dealer

The Oakland A's most famous member may be its general manager, Billy Beane. Beane has set a new standard of managerial prowess as the Oakland A's have been able to be one of the most successful franchises in Major League Baseball, despite having a payroll that has always fallen into the bottom-third of Major League clubs. The Oakland A's have made the post-season five times over the previous decade and compiled winning records in eight seasons. The A's are also well known for being the subject of the national bestseller, *Moneyball*, which focused on the team's unorthodox approach to management and player evaluation.

Billy Beane and the Oakland A's have been among the most successful teams of this past decade because of their unorthodox approach and creativity. One of Beane's was most famous moves came when dealing away two-thirds of his prized "Big Three" for prospects and continuing to compete. Oakland's "Big Three" were pitchers Tim Hudson,

Mark Mulder, and Barry Zito. All three were All-Stars multiple times during their tenure with the A's and perennial Cy-Young Award contenders. However, as free-agency lurked with the three pitchers, the A's looked to make the most of their assets.

Pitchers Tim Hudson and Mark Mulder were traded within 2 weeks of each other before the start of the 2005 baseball season. Hudson's trade ultimately did not create an impressive return for the ace. The key piece of the trade, Dan Meyer, was eventually waived by the A's after failing to record a win at the Major League level. Hudson has been a great success to the Atlanta Braves overall, averaging a Wins Above Replacement value of 2.88 over six seasons.[59] However, Mulder's trade turned into a great success for Oakland and colossal failure for the St. Louis Cardinals. Mulder's trade produced two future starters for the A's: Daric Barton and Dan Haren. Haren would go on become an All-Star with the A's, and Barton is the team's current starting first baseman. The Cardinals got only 55 games out of Mulder over four seasons, which were plagued with injuries. Despite numerous comeback attempts, Mulder has not played at the Major League level since the 2008 season, essentially ending his career at only 30 years old.[60]

Haren would ultimately be traded to the Arizona Diamondbacks for six players. Among the trade haul for Haren were Carlos Gonzalez and Brett Anderson. Carlos Gonzalez would be used in a 2009 trade to acquire perennial All-Star Matt Holliday, but has developed into a star after two seasons. Gonzalez finished third in the NL MVP voting in 2010 and was awarded the Gold Glove for his position. Brett Anderson is the current anchor of another deep, talented Oakland pitching staff that is expected to

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[59] www.fangraphs.com.

[60] Boeck, Scott. "Mark Mulder says he's retired; now playing competitive golf," USATODAY.com, accessed April 20, 2011, http://content.usatoday.com/communities/dailypitch/post/2010/06/mark-mulder-says-hes-retired-now-playing-competitive--golf/1.

compete for another post-season berth. The Matt Holliday acquisition was intended to give the A's a trade chip for the mid-season trade deadline, which he did. The A's once again made a deal to acquire more prospects.

The lone remaining member of the original "Big Three," Barry Zito was unceremoniously let go and signed with the neighboring San Francisco Giants in 2008. Zito signed the most expensive contract ever for a pitcher at 7-years worth at least $126 million. Zito has been a complete failure since his arrival in San Francisco, failing to return to the All-Star game, and he was left off the Giants' post-season roster during their World Series title run in 2010.

Billy Beane and the A's are frequent movers in the trade market. They have had their successes and failures. But most importantly, they show to be the only team, of the above-mentioned cases, that has been able to create successful trades for all-star players. The trades of Mark Mulder and Dan Haren have been rare examples of the past decade where a team has lost an all-star and replaced him with not even serviceable players, let alone an all-star. The Schilling, Santana, and Sabathia deals can be looked at as major losses to the teams that lost their super-stars. These also serve as examples of how youth is over-valued more than it needs to be in baseball today. An all-star is a rare player to have, and, as shown by the regression analysis, play a significant role in the on-field success of an organization. Furthermore, despite being frugal, the operating income of a team is still heavily reliant on the amount of financial investment made on a ball club.

Chapter 6 - Final Thoughts

The purpose of this thesis was to analyze the current management structures that exist within baseball. Today youth is stressed so much, but, as this thesis has shown, it appears that baseball today is truly over-valuing the potential of players. As shown by the case study analysis and regression analysis, on-field success is best maintained throughout the use of Major League-proven players. While their output may decline throughout their 30s, their trajectory is more predictable than a minor league prospect. Teams that have the opportunity to acquire an All-Star-caliber player throughout trade of prospects should almost always take such deals. Simple statistics even emphasize this fact. If only 68 players are selected to the All-Star game and 750 players are on opening day rosters, less than 10% of players in Major League Baseball are "stars." If we take into consideration the fact that every team has to be represented and, as a result, a few players are not statistically a superstar, which leaves an even smaller percentage of true stars.

Ten years ago, Baseball America ranked their top 100 prospects. Today, the top 100 players in baseball who were prospects in 2001 look very different. In total there were 76 different players among the two lists, with 24 players being on both lists. This means that only 24% of players in the top 100 from 2001 were ranked among the top 100 players ten years later (*see Appendix E*).[61] Perennial All-Stars such as Hanley Ramirez and Matt Holliday went unranked, while players like Corey Patterson, who today are unknown to the common fan, were ranked at the top of the list. Some players have crossed over between lists, but the results show that the future of prospects is uncertain.

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[61] Sam Miller, "Baseball America's top propects, 10 years later," Angels blog - The Orange County Register, accessed April 1, 2011, http://angels.ocregister.com/2011/02/23/baseball-americas-top-prosects-10-years-later/73283/

Such uncertainty makes it hard to compete with the guaranteed performance of a proven Major League player.

However, there is a justified position for the stance of teams that have dealt away their All-Stars. Financially, it makes the most sense for a team that is seemingly unable to re-sign a player to deal him away for whatever prospects they can acquire. In the case of these deals, teams must ask themselves if it is worth taking two first round draft picks or possibly as many as five prospects. Such a proposition depends on the position of the organization, and the timing of their windows. If a window or competitiveness is near, it may be best to acquire prospects from a team in a trade, who are likely to be closer to the Major League level than throughout the draft. It is also easier to predict a career trajectory of a player with more data, which favors minor league prospects.

Another justification for trading away All-Stars is that, based on the model of analysis, a team will need at least two All-Stars to be seriously competitive. Seventeen out of twenty-one teams with two or more All-Stars produced winning records. No team with one All-Star produced a winning record in baseball last year. And no team with one All-Star had a better record than any team with multiple All-Stars. The failure of these teams can be tied to the fact that they simply do not even have a player of All-Star caliber, and was selected by mandatory representation. Two All-Stars eliminates the mandatory requirement, which can be interpreted to mean that a team with two or more All-Stars truly has two of the best players in baseball.

Without two All-Star caliber players, it seems very unlikely that a team can compete. However, it is difficult to even pinpoint who will be among the best in the league from year-to-year. In analyzing the 2009 and 2010 baseball seasons, it was found

that 24 of the top-50 players in Wins Above Replacement value from 2009 were also ranked in the top-50 the following season, with only two players repeating top-ten performances (Evan Longoria and Albert Pujols).[62] Nearly fifty percent odds are not encouraging, but they are not discouraging either. Furthermore, the career successes of many of these players were not predicted originally, as shown in the analysis of Baseball America's top-100 prospects.

While this model of analysis supports the actions of such teams as the New York Yankees, there is still a tremendous financial risk to signing players to long-term deals out of free-agency. Repeat success out of free-agency is rare, and it is a huge financial risk to sign players to maximum deals with the expectation that they will decline as their careers progress. Such tactics are inefficient for any team model, and they leave teams committed to a player. And in some cases teams are left with a very expensive bench player. However, in a sport where reaching base forty-percent of the time is considered to be an excellent accomplishment, perhaps these teams are in the right. Some elite production is better than no time of elite production. And the quickest, safest way to acquire elite production is to select players with a history of elite production at the Major League level. Prospects take time to develop, and, even then, there are no guarantees that they will meet their expectations. Fans are impatient. No one wants to be told to wait until the next season. But without the capital to invest in such players, a team has no choice but to play the waiting game. It may not be as glamorous or as financially profitable as the other side of the spectrum, but it is the method that many teams live by today.

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[62] Appendix F

The state of Major League Baseball as a league today is similar to the game itself. Teams experience streaks both positive and negative. With the exception of a select few teams, the majority of teams will experience momentary success before they decline toward the cellar. Similarly players have their ups and downs, and, with the exception of a select few players, players will eventually decline from prominence. Such is the cycle of life as well. But in a sport where not making an out 40 percent of the time is considered to be excellent, reaching the playoffs three to four times in a decade cannot be considered a failure. For some franchises, that is all that they can hope for. These franchises live on hope and chance. They hope that their cheap, youth is talented enough, and that their potential for greatness will have a chance to compete with consistent, proven, well-paid veterans. It seems unfair, and it probably is. But every day we hear of the success of an individual beating the odds of the system and achieving greatness. Teams like the San Francisco Giants remind us of the American values of hard work and persistence, and that anything is possible.

Appendix A

Independent Variables

Team	Age	FA/Team	All-Stars	Trans/Team	Payroll	2010 Winning Pct	Op. Income*	Wins
NYY	29.648	14	8	27	206,333,389.00	.586	25.7	95
BOS	29.946	9	6	43	162,447,333.00	.549	-1.1	89
ATL	27.888	11	6	24	84,423,666.00	.562	22.2	91
TEX	27.671	5	6	28	55,250,544.00	.556	22.6	90
STL	28.315	10	5	15	93,540,751.00	.531	19.8	86
LAD	29.463	12	4	42	95,358,016.00	.494	32.8	80
TBR	27.768	5	4	25	71,923,471.00	.593	6.8	96
CIN	29.156	8	4	17	71,761,542.00	.562	20.1	91
PHI	30.667	12	3	30	141,928,379.00	.599	8.9	97
DET	28.865	8	3	14	122,864,928.00	.500	-29.1	81
MIL	28.005	11	3	24	81,108,278.00	.475	12.4	77
TOR	29.882	9	3	36	62,234,000.00	.525	3.6	85
NYM	27.833	17	2	30	134,422,942.00	.488	-6.2	79
CHW	29.625	8	2	16	105,530,000.00	.543	27.6	88
LAA	29.103	8	2	14	104,963,866.00	.494	11.8	80
SFG	28.715	14	2	22	98,641,333.00	.568	29.9	92
MIN	28.294	6	2	16	97,559,166.00	.580	26.5	94
COL	28.636	9	2	15	84,227,000.00	.512	16.3	83

Appendix A

Independent Variables

FLA	27.331	6	2	22	57,034,719.00	.494	20.2	80
OAK	28.235	6	2	31	51,654,900.00	.500	23.2	81
SDP	29.548	6	2	17	37,799,300.00	.556	37.2	90
CHC	29.028	12	1	17	146,609,000.00	.463	23.4	75
HOU	29.789	14	1	37	92,355,500.00	.469	14.4	76
SEA	28.735	9	1	30	86,510,000.00	.377	9.9	61
BAL	28.957	8	1	17	81,612,500.00	.407	25.5	66
KCR	29.006	8	1	30	71,405,210.00	.414	10.3	67
WSN	28.067	12	1	31	61,400,000.00	.426	36.6	69
CLE	28.057	8	1	25	61,203,966.00	.426	12.1	69
ARI	27.804	9	1	22	60,718,166.00	.401	6.2	65
PIT	26.99	8	1	34	34,943,000.00	.352	24.6	57
MLB Avg	**28.701**	**9**	**3**	**25**	**90,592,162**	**.500**	**16.473**	**81**

* in millions of dollars

Appendix B

Multiple Regression Analysis
DV: Operating Income

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.351[a]	.123	.092	.064750
2	.368[b]	.135	.071	.065470
3	.718[c]	.516	.460	.049929
4	.768[d]	.590	.524	.046855
5	.771[e]	.595	.511	.047518

a. Predictors: (Constant), Age

b. Predictors: (Constant), Age, FA

c. Predictors: (Constant), Age, FA, AS

d. Predictors: (Constant), Age, FA, AS, Transactions

e. Predictors: (Constant), Age, FA, AS, Transactions, Payroll

Appendix B

Multiple Regression Analysis
DV: Operating Income

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.276	.392		-.705	.487
	Age	.027	.014	.351	1.981	.057
2	(Constant)	-.316	.401		-.786	.439
	Age	.029	.014	.380	2.053	.050
	FA	-.003	.004	-.115	-.622	.539
3	(Constant)	-.174	.308		-.566	.577
	Age	.022	.011	.289	2.029	.053
	FA	-.003	.003	-.128	-.907	.373
	AS	.023	.005	.624	4.519	.000
4	(Constant)	-.178	.289		-.617	.543
	Age	.024	.010	.308	2.302	.030
	FA	-.001	.003	-.054	-.391	.699
	AS	.024	.005	.658	5.040	.000
	Transactions	-.002	.001	-.287	-2.127	.043
5	(Constant)	-.266	.333		-.799	.432
	Age	.027	.012	.351	2.248	.034
	FA	.000	.004	.007	.039	.969
	AS	.026	.006	.705	4.490	.000
	Transactions	-.003	.001	-.313	-2.164	.041
	Payroll	-2.114E-10	.000	-.119	-.554	.585

Appendix B

Multiple Regression Analysis
DV: Operating Income

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.051[a]	.003	-.033	13.875962
2	.058[b]	.003	-.071	14.125706
3	.061[c]	.004	-.111	14.391480
4	.070[d]	.005	-.154	14.667931
5	.385[e]	.148	-.029	13.849399

a. Predictors: (Constant), Age

b. Predictors: (Constant), Age, FA

c. Predictors: (Constant), Age, FA, AS

d. Predictors: (Constant), Age, FA, AS, Transactions

e. Predictors: (Constant), Age, FA, AS, Transactions, Payroll

Appendix B

Multiple Regression Analysis
DV: Operating Income

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	39.289	84.013		.468	.644
	Age	-.795	2.926	-.051	-.272	.788
2	(Constant)	37.429	86.602		.432	.669
	Age	-.689	3.077	-.044	-.224	.824
	FA	-.125	.914	-.027	-.137	.892
3	(Constant)	36.442	88.692		.411	.685
	Age	-.641	3.167	-.041	-.202	.841
	FA	-.123	.931	-.027	-.132	.896
	AS	-.158	1.443	-.022	-.109	.914
4	(Constant)	36.338	90.397		.402	.691
	Age	-.603	3.235	-.039	-.186	.854
	FA	-.080	.981	-.017	-.081	.936
	AS	-.127	1.481	-.017	-.086	.932
	Transactions	-.059	.343	-.036	-.171	.866
5	(Constant)	-56.577	97.061		-.583	.565
	Age	2.882	3.512	.186	.821	.420
	FA	1.383	1.178	.300	1.174	.252
	AS	1.663	1.658	.228	1.003	.326
	Transactions	-.278	.342	-.170	-.814	.424
	Payroll	-2.236E-7	.000	-.626	-2.011	.056

Appendix C

Free-Agent Classes By Year (2006-2009)

2006

PLAYER	POSITION	AGE	STATUS	2006 TEAM	NEW TEAM	YEARS	DOLLARS
Alfonso Soriano	LF	35	Signed (A)	Washington	Chicago Cubs	8	$136,000,000
Barry Zito	SP	32	Signed (A)	Oakland	San Francisco	7	$126,000,000
Carlos Lee	LF	34	Signed (A)	Texas	Houston	6	$100,000,000
Aramis Ramirez	3B	32	Signed (A)	Chicago Cubs	Chicago Cubs	5	$75,000,000
J.D. Drew	RF	35	Signed (A)	LA Dodgers	Boston	5	$70,000,000
Gil Meche	SP	32	Signed (B)	Seattle	Kansas City	5	$55,000,000
Daisuke Matsuzaka	SP	30	Signed	Japan	Boston	6	$52,000,000
Gary Matthews Jr.	CF	36	Signed (A)	Texas	LA Angels	5	$50,000,000
Jason Schmidt	SP	38	Signed (A)	San Francisco	LA Dodgers	3	$47,000,000
Juan Pierre	LF	33	Signed (B)	Chicago Cubs	LA Dodgers	5	$44,000,000
Jeff Suppan	RP	36	Signed (A)	St. Louis	Milwaukee	4	$42,000,000
Ted Lilly	SP	35	Signed (B)	Toronto	Chicago Cubs	4	$40,000,000
Julio Lugo	2B	35	Signed	LA Dodgers	Boston	4	$36,000,000
Vicente Padilla	SP	33	Signed (B)	Texas	Texas	3	$33,750,000
Miguel Batista	SP	40	Signed (B)	Arizona	Seattle	3	$25,000,000
Adam Eaton	SP	33	Signed	Texas	Philadelphia	3	$24,500,000
Mike Mussina	SP	42	Signed (A)	NY Yankees	NY Yankees	2	$23,000,000

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Free-Agent Classes By Year (2006-2009)

Jason Marquis	SP	32	Signed	St. Louis	Chicago Cubs	3	$21,000,000
Aubrey Huff	1B	34	Signed (A)	Houston	Baltimore	3	$20,000,000
Kei Igawa	SP	31	Signed	Japan	NY Yankees	5	$20,000,000
Danys Baez	RP	33	Signed (A)	Atlanta	Baltimore	3	$19,000,000
Jim Edmonds	CF	40	Signed (A)	St. Louis	St. Louis	2	$19,000,000
Nomar Garciaparra	1B	37	Signed (B)	LA Dodgers	LA Dodgers	2	$18,500,000
Frank Thomas	DH	42	Signed (B)	Oakland	Toronto	2	$18,120,000
Dave Roberts	LF	38	Signed (A)	San Diego	San Francisco	3	$18,000,000
Justin Speier	RP	37	Signed (A)	Toronto	LA Angels	4	$18,000,000
Bengie Molina	C	36	Signed (A)	Toronto	San Francisco	3	$16,000,000
Andy Pettitte	SP	38	Signed	Houston	NY Yankees	1	$16,000,000
Barry Bonds	LF	46	Signed	San Francisco	San Francisco	1	$15,800,000
Ray Durham	2B	39	Signed (A)	San Francisco	San Francisco	2	$14,000,000

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Free-Agent Classes By Year (2006-2009)

2007

PLAYER	POSITION	AGE	STATUS	2007 TEAM	NEW TEAM	YEARS	DOLLARS
Alex Rodriguez	3B	35	Signed	NY Yankees	NY Yankees	10	$275,000,000
Torii Hunter	RF	35	Signed (A)	Minnesota	LA Angels	5	$90,000,000
Aaron Rowand	CF	33	Signed (A)	Philadelphia	San Francisco	5	$60,000,000
Jorge Posada	DH	39	Signed	NY Yankees	NY Yankees	4	$52,400,000
Carlos Silva	SP	31	Signed	Minnesota	Seattle	4	$48,000,000
Francisco Cordero	RP	35	Signed (A)	Milwaukee	Cincinnati	4	$46,000,000
Mariano Rivera	RP	41	Signed	NY Yankees	NY Yankees	3	$45,000,000
Mike Lowell	1B	37	Signed	Boston	Boston	3	$37,500,000
Andruw Jones	CF	33	Signed	Atlanta	LA Dodgers	2	$36,200,000
Jose Guillen	RF	34	Signed	Seattle	Kansas City	3	$36,000,000
Luis Castillo	2B	35	Signed	NY Mets	NY Mets	4	$25,000,000
Scott Linebrink	RP	34	Signed (A)	Milwaukee	Chicago Sox	4	$19,000,000
Kazuo Matsui	2B	35	Signed	Colorado	Houston	3	$16,500,000
Andy Pettitte	SP	38	Signed	NY Yankees	NY Yankees	1	$16,000,000
Geoff Jenkins	RF	36	Signed	Milwaukee	Philadelphia	2	$13,000,000
David Riske	RP	34	Signed (B)	Kansas City	Milwaukee	3	$13,000,000
Octavio Dotel	RP	37	Signed	Atlanta	Chicago Sox	2	$11,000,000
Eric Gagne	RP	35	Signed (B)	Boston	Milwaukee	1	$10,000,000
Pedro Feliz	3B	35	Signed (B)	San Francisco	Philadelphia	2	$8,500,000
Tom Glavine	SP	45	Signed (A)	NY Mets	Atlanta	1	$8,000,000
Ron Mahay	RP	39	Signed (B)	Atlanta	Kansas City	2	$8,000,000

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Free-Agent Classes By Year (2006-2009)

Troy Percival	RP	41	Signed (B)	St. Louis	Tampa Bay	2	$8,000,000
Kenny Rogers	SP	46	Signed	Detroit	Detroit	1	$8,000,000
Luis Vizcaino	RP	36	Signed	NY Yankees	Colorado	2	$7,500,000
Yorvit Torrealba	C	32	Signed	Colorado	Colorado	2	$7,250,000
Mike Cameron	CF	38	Signed (B)	San Diego	Milwaukee	1	$7,000,000
Keith Foulke	RP	38	Signed	Cleveland	Oakland	1	$7,000,000
Mike Lamb	3B	35	Signed	Houston	Minnesota	2	$6,600,000
Masa Kobayashi	RP	36	Signed	Japan	Cleveland	2	$6,500,000
Milton Bradley	LF	33	Signed	San Diego	Texas	1	$5,000,000

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Free-Agent Classes By Year (2006-2009)

2008

PLAYER	POSITION	AGE	STATUS	2008 TEAM	NEW TEAM	YEARS	DOLLARS
Mark Teixeira	1B	31	Signed (A)	LA Angels	NY Yankees	8	$180,000,000
CC Sabathia	SP	30	Signed (A)	Milwaukee	NY Yankees	7	$161,000,000
A.J. Burnett	SP	34	Signed (A)	Toronto	NY Yankees	5	$82,500,000
Derek Lowe	SP	37	Signed (A)	LA Dodgers	Atlanta	4	$60,000,000
Ryan Dempster	SP	33	Signed	Chicago Cubs	Chicago Cubs	4	$52,000,000
Manny Ramirez	DH	38	Signed	LA Dodgers	LA Dodgers	2	$45,000,000
Francisco Rodriguez	RP	29	Signed (A)	LA Angels	NY Mets	3	$37,000,000
Oliver Perez	SP	29	Signed	NY Mets	NY Mets	3	$36,000,000
Raul Ibanez	LF	38	Signed (A)	Seattle	Philadelphia	3	$31,500,000
Milton Bradley	LF	33	Signed (B)	Texas	Chicago Cubs	3	$30,000,000
Rafael Furcal	SS	33	Signed	LA Dodgers	LA Dodgers	3	$30,000,000
Kenshin Kawakami	SP	35	Signed	Japan	Atlanta	3	$23,000,000
Kerry Wood	RP	33	Signed	Chicago Cubs	Cleveland	2	$20,500,000
Adam Dunn	DH	31	Signed	Arizona	Washington	2	$20,000,000
Edgar Renteria	SS	35	Signed	Detroit	San Francisco	2	$18,500,000
Casey Blake	3B	37	Signed	LA Dodgers	LA Dodgers	3	$17,500,000
Brian Fuentes	RP	35	Signed (A)	Colorado	LA Angels	2	$17,500,000
Pat Burrell	LF	34	Signed	Philadelphia	Tampa Bay	2	$16,000,000
Jamie Moyer	SP	48	Signed	Philadelphia	Philadelphia	2	$13,000,000
Juan Rivera	DH	32	Signed	LA Angels	LA Angels	3	$12,750,000
Damaso Marte	RP	36	Signed	NY Yankees	NY Yankees	3	$12,000,000
Koji Uehara	RP	36	Signed	Japan	Baltimore	2	$10,000,000
Kyle Farnsworth	RP	35	Signed	Detroit	Kansas City	2	$9,250,000

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Free-Agent Classes By Year (2006-2009)

Nick Punto	3B	33	Signed	Minnesota	Minnesota	2	$8,500,000
Jeremy Affeldt	RP	31	Signed (B)	Cincinnati	San Francisco	2	$8,000,000
Randy Johnson	SP	47	Signed	Arizona	San Francisco	1	$8,000,000
Jon Garland	SP	31	Signed (B)	LA Angels	Arizona	1	$7,250,000
Willy Taveras	CF	29	Signed	Colorado	Cincinnati	2	$6,250,000
Juan Cruz	RP	32	Signed (A)	Arizona	Kansas City	2	$6,000,000
Trevor Hoffman	RP	43	Signed	San Diego	Milwaukee	1	$6,000,000

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Free-Agent Classes By Year (2006-2009)

2009

PLAYER	POSITION	AGE	STATUS	2009 TEAM	NEW TEAM	YEARS	DOLLARS
Matt Holliday	LF	31	Signed	St. Louis	St. Louis	7	$120,000,000
John Lackey	SP	32	Signed (A)	LA Angels	Boston	5	$82,500,000
Jason Bay	LF	32	Signed (A)	Boston	NY Mets	4	$66,000,000
Chone Figgins	3B	33	Signed (A)	LA Angels	Seattle	4	$36,000,000
Aroldis Chapman	RP	23	Signed	Cuba	Cincinnati	6	$30,250,000
Randy Wolf	SP	34	Signed	LA Dodgers	Milwaukee	3	$29,750,000
Placido Polanco	3B	35	Signed	Detroit	Philadelphia	3	$18,000,000
Joel Pineiro	SP	32	Signed (B)	St. Louis	LA Angels	2	$16,000,000
Mike Cameron	CF	38	Signed	Milwaukee	Boston	2	$15,500,000
Marlon Byrd	CF	33	Signed (B)	Texas	Chicago Cubs	3	$15,000,000
Brandon Lyon	RP	31	Signed (B)	Detroit	Houston	3	$15,000,000
Jason Marquis	SP	32	Signed (B)	Colorado	Washington	2	$15,000,000
Jose Valverde	RP	33	Signed (A)	Houston	Detroit	2	$14,000,000
Marco Scutaro	SS	35	Signed (A)	Toronto	Boston	2	$12,500,000
Mark DeRosa	LF	36	Signed (B)	St. Louis	San Francisco	2	$12,000,000
Mike Gonzalez	RP	32	Signed (A)	Atlanta	Baltimore	2	$12,000,000
Andy Pettitte	SP	38	Signed	NY Yankees	NY Yankees	1	$11,750,000
Fernando Rodney	RP	34	Signed (B)	Detroit	LA Angels	2	$11,000,000
Adrian Beltre	3B	32	Signed (B)	Seattle	Boston	1	$10,000,000
Ben Sheets	SP	32	Signed	--	Oakland	1	$10,000,000
Johnny Damon	DH	37	Signed	NY Yankees	Detroit	1	$8,000,000

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Free-Agent Classes By Year (2006-2009)

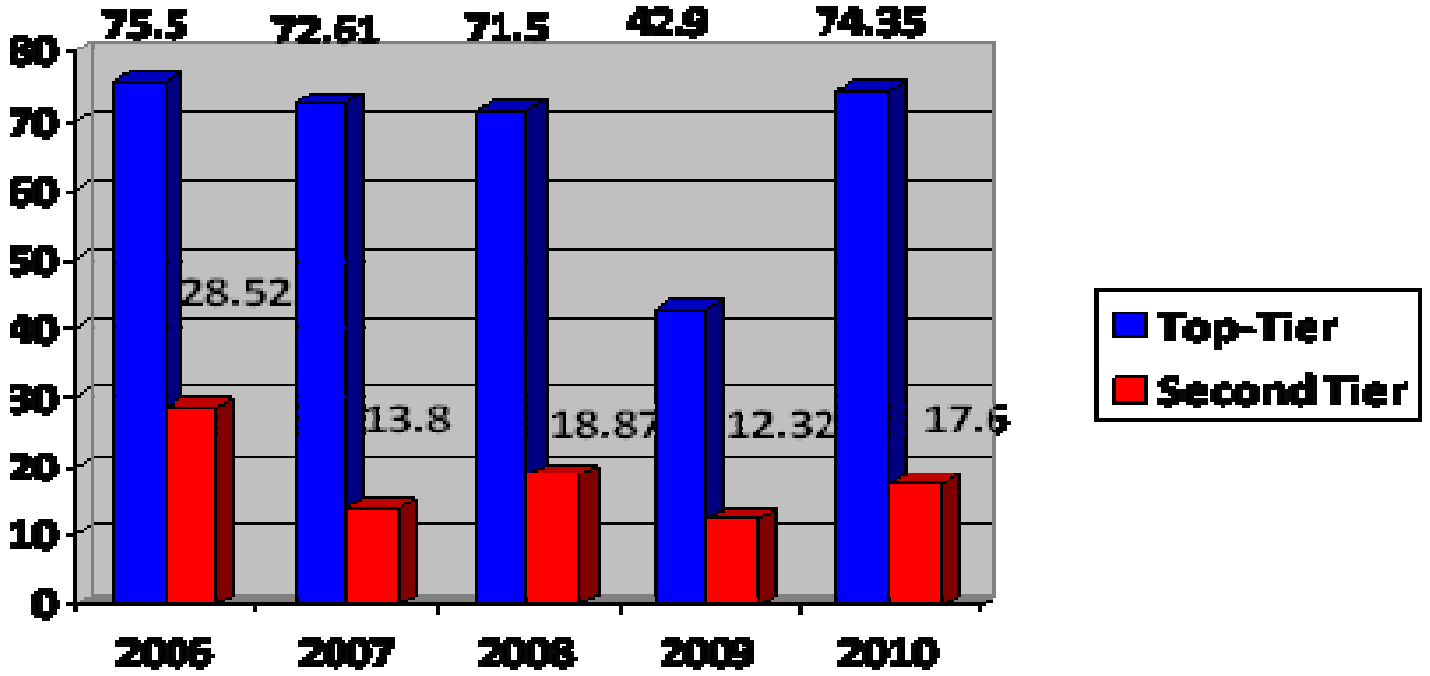
Rafael Betancourt	RP	35	Signed	Colorado	Colorado	2	$7,550,000
John Grabow	RP	32	Signed	Chicago Cubs	Chicago Cubs	2	$7,500,000
Rich Harden	SP	29	Signed	Chicago Cubs	Texas	1	$7,500,000
LaTroy Hawkins	RP	38	Signed	Houston	Milwaukee	2	$7,500,000
Brad Penny	SP	32	Signed	San Francisco	St. Louis	1	$7,500,000
Rafael Soriano	RP	31	Signed	Atlanta	Tampa Bay	1	$7,250,000
Noel Arguelles	SP		Signed	Cuba	Kansas City	5	$7,000,000
Carl Pavano	SP	35	Signed	Minnesota	Minnesota	1	$7,000,000
Billy Wagner	RP	39	Signed (A)	Boston	Atlanta	1	$7,000,000

Appendix C

Free-Agent Classes By Year (2006-2009)

Average Spending in Free Agency (2006-2010)

in millions of dollars



** *All data acquired from ESPN.com*

Appendix D

Baseball America Top-100 Prospects, 10 Years Later

Today's Ranking	Rank	BA's 2001 List	
Albert Pujols (42)	1	Josh Hamilton (51)	
Ichiro Suzuki (9)	2	Corey Patterson	
Roy Oswalt (13)	3	Josh Beckett (24)	
CC Sabathia (7)	4	Jon Rauch	
Chase Utley	5	Ben Sheets (21)	
Miguel Cabrera (91)	6	Sean Burroughs	
Carlos Zambrano (68)	7	CC Sabathia (4)	
Jimmy Rollins (31)	8	Ryan Anderson	
Brandon Webb	9	Ichiro Suzuki (2)	
Hanley Ramirez	10	Nick Johnson (56)	
Grady Sizemore	11	Carlos Pena (68)	
Matt Holliday	12	Vernon Wells (16)	
John Lackey	13	Roy Oswalt (3)	
Adam Dunn (33)	14	Drew Henson	
Jake Peavy (40)	15	Chin-Hui Tsao	
Vernon Wells (12)	16	Antonio Perez	
Carl Crawford (72)	17	Juan Cruz	
Ted Lilly	18	Alex Escobar	
Victor Martinez	19	Jerome Williams	
Mike Young	20	Bobby Bradley	
Ben Sheets (5)	21	R House	
Jose Reyes	22	Hee Seop Choi	
Casey Blake	23	Joe Borchard	
Josh Beckett (3)	24	Austin Kearns (53)	
Alfonso Soriano (27)	25	Chris George	
Chone Figgins	26	Donnie Bridges	
Cliff Lee	27	Alfonso Soriano (25)	
Brian Roberts	28	Matt Belisle	
Adrian Gonzalez (89)	29	Wilson Betemit	
David DeJesus	30	Kurt Ainsworth	
Travis Hafner	31	Jimmy Rollins (8)	
David Eckstein	32	Felipe Lopez	
Joe Nathan	33	Adam Dunn (14)	
Justin Morneau	34	Jose Ortiz	
Mark Ellis	35	Brad Wilkerson (84)	
Orlando Hudson	36	Joe Crede (74)	
Francisco Rodriguez (71)	37	Ben Christensen	
Aaron Rowand	38	Jack Cust	

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Baseball America Top-100 Prospects, 10 Years Later

Jason Bay	39	Bud Smith	
Brandon Inge (67)	40	Jacob Peavy (15)	
Jayson Werth	41	Adam Johnson	
Adam Wainwright (97)	42	Albert Pujols (1)	
Lyle Overbay	43	Aubrey Huff (54)	
Shin-Soo Choo	44	Matt Ginter	
Coco Crisp	45	Wes Anderson	
Aaron Harang	46	Angelo Jimenez	
Erik Bedard	47	Brett Myers (65)	
Jhonny Peralta	48	Dee Brown	
Marcus Giles (54)	49	Tim Redding	
Marco Scutaro	50	Joe Torres	
Josh Hamilton (1)	51	Matt McClendon	
Rich Harden	52	Jason Standridge	
Austin Kearns (24)	53	Wascar Serrano	
Aubrey Huff (43)	54	Marcus Giles (49)	
Juan Uribe (94)	55	Michael Cuddyer	
Nick Johnson (10)	56	Kevin Mench	
Jack Wilson	57	Wilfredo Rodriguez	
Marlon Byrd	58	Mike Bynum	
Kelly Johnson	59	Jason Hart	
Joel Pineiro (80)	60	Tony Torcato	
Jamey Carroll	61	Dan Wright	
Aaron Cook	62	Alex Cintron	
Shane Victorino	63	Pat Strange	
Eric Byrnes	64	Brian Cole	
Brett Myers (47)	65	Jovanny Cedeno	
Jake Westbrook	66	Adrian Hernandez	
Dontrelle Willis	67	Brandon Inge (40)	
Carlos Pena (11)	68	Carlos Zambrano (7)	
Freddy Sanchez	69	Jesus Colome	
Ryan Franklin	70	Eric Munson	
Morgan Ensberg	71	Francisco Rodriguez (37)	
Scot Shields	72	Carl Crawford (17)	
Scott Podsednik	73	Luis Montanez	
Joe Crede (36)	74	Dane Sardinha	
Alexis Rios	75	Abraham Nunez	
James Shields	76	Brad Baker	
Brian Fuentes	77	Dernell Stenson	

Appendix D

Baseball America Top-100 Prospects, 10 Years Later

Josh Willingham	78	Brad Baisley	
Mike Napoli	79	Mike MacDougal	
Yadier Molina	80	Joel Pineiro (60)	
Chris Young	81	Ryan Ludwick (100)	
J.J. Putz	82	Xavier Nady	
Rafael Betancourt	83	Nick Neugebauer	
Brad Wilkerson (35)	84	Justin Miller	
Franklin Gutierrez	85	Lance Niekro	
Corey Hart	86	Chin-Feng Chen	
Damaso Marte	87	Tony Blanco	
Garrett Atkins	88	Danys Baez	
Maicer Izturis	89	Adrian Gonzalez (29)	
Brian Schneider	90	David Espinosa	
Rafael Soriano	91	Miguel Cabrera (6)	
Justin Duchscherer	92	Jason Marquis	
Jose Valverde	93	Luis Rivas	
Bobby Jenks	94	Juan Uribe (55)	
Eric Hinske	95	Ramon Santiago	
Matt Thornton	96	Keith Reed	
Angel Pagan	97	Adam Wainwright (42)	
Omar Infante	98	Chris Snelling	
Hank Blalock	99	Joe Lawrence	
Ryan Ludwick (81)	100	Matt White	

Appendix E
List of Variables and Values

Team	Age	FA/Team	All-Stars	Trans/Team	Payroll	2010 Winning Pct	Op. Income*	Wins
NYY	29.648	14	8	27	206,333,389.00	.586	25.7	95
BOS	29.946	9	6	43	162,447,333.00	.549	-1.1	89
ATL	27.888	11	6	24	84,423,666.00	.562	22.2	91
TEX	27.671	5	6	28	55,250,544.00	.556	22.6	90
STL	28.315	10	5	15	93,540,751.00	.531	19.8	86
LAD	29.463	12	4	42	95,358,016.00	.494	32.8	80
TBR	27.768	5	4	25	71,923,471.00	.593	6.8	96
CIN	29.156	8	4	17	71,761,542.00	.562	20.1	91
PHI	30.667	12	3	30	141,928,379.00	.599	8.9	97
DET	28.865	8	3	14	122,864,928.00	.500	-29.1	81
MIL	28.005	11	3	24	81,108,278.00	.475	12.4	77
TOR	29.882	9	3	36	62,234,000.00	.525	3.6	85
NYM	27.833	17	2	30	134,422,942.00	.488	-6.2	79
CHW	29.625	8	2	16	105,530,000.00	.543	27.6	88
LAA	29.103	8	2	14	104,963,866.00	.494	11.8	80

Appendix E
List of Variables and Values

SFG	28.715	14	2	22	98,641,333.00	.568	29.9	92
MIN	28.294	6	2	16	97,559,166.00	.580	26.5	94
COL	28.636	9	2	15	84,227,000.00	.512	16.3	83
FLA	27.331	6	2	22	57,034,719.00	.494	20.2	80
OAK	28.235	6	2	31	51,654,900.00	.500	23.2	81
SDP	29.548	6	2	17	37,799,300.00	.556	37.2	90
CHC	29.028	12	1	17	146,609,000.00	.463	23.4	75
HOU	29.789	14	1	37	92,355,500.00	.469	14.4	76
SEA	28.735	9	1	30	86,510,000.00	.377	9.9	61
BAL	28.957	8	1	17	81,612,500.00	.407	25.5	66
KCR	29.006	8	1	30	71,405,210.00	.414	10.3	67
WSN	28.067	12	1	31	61,400,000.00	.426	36.6	69
CLE	28.057	8	1	25	61,203,966.00	.426	12.1	69
ARI	27.804	9	1	22	60,718,166.00	.401	6.2	65
PIT	26.99	8	1	34	34,943,000.00	.352	24.6	57
MLB Avg	**28.701**	**9**	**3**	**25**	**90,592,162**	**.500**	**16.473**	**81**

Appendix E
List of Variables and Values

* in millions of dollars

Appendix F
Top-50 Players by Wins Above Replacement Value

2009			2010		
Player	**Team**	**WAR**	**Player**	**Team**	**WAR**
Zack Greinke	Royals	9.4	Josh Hamilton	Rangers	8
Albert Pujols	Cardinals	8.7	Joey Votto	Reds	7.4
Ben Zobrist	Rays	8.4	Albert Pujols	Cardinals	7.3
Justin Verlander	Tigers	8.3	Ryan Zimmerman	Nationals	7.2
Tim Lincecum	Giants	8.2	Cliff Lee	- - -	7.1
Joe Mauer	Twins	8	Adrian Beltre	Red Sox	7.1
Chase Utley	Phillies	7.7	Jose Bautista	Blue Jays	6.9
Roy Halladay	Blue Jays	7.3	Evan Longoria	Rays	6.9
Evan Longoria	Rays	7.3	Matt Holliday	Cardinals	6.9
Hanley Ramirez	Marlins	7.1	Carl Crawford	Rays	6.9
Derek Jeter	Yankees	7.1	Roy Halladay	Phillies	6.6
Prince Fielder	Brewers	6.9	Troy Tulowitzki	Rockies	6.4
Felix Hernandez	Mariners	6.8	Robinson Cano	Yankees	6.4
Ryan Zimmerman	Nationals	6.7	Justin Verlander	Tigers	6.3
Cliff Lee	- - -	6.6	Josh Johnson	Marlins	6.3
Javier Vazquez	Braves	6.5	Ubaldo Jimenez	Rockies	6.3
Adrian Gonzalez	Padres	6.5	Felix Hernandez	Mariners	6.2
Jon Lester	Red Sox	6.3	Miguel Cabrera	Tigers	6.2
CC Sabathia	Yankees	6.3	Adam Wainwright	Cardinals	6.1
Chone Figgins	Angels	6.1	Rickie Weeks	Brewers	6.1
Dan Haren	Diamondbacks	6.1	Francisco Liriano	Twins	6
Franklin Gutierrez	Mariners	6.1	Andres Torres	Giants	6
Kevin Youkilis	Red Sox	5.9	Kelly Johnson	Diamondbacks	6
Adam Wainwright	Cardinals	5.7	Carlos Gonzalez	Rockies	6
Carl Crawford	Rays	5.7	Jered Weaver	Angels	5.9
Troy Tulowitzki	Rockies	5.7	Aubrey Huff	Giants	5.7
Ubaldo Jimenez	Rockies	5.7	Jon Lester	Red Sox	5.6
Chris Carpenter	Cardinals	5.6	Shin-Soo Choo	Indians	5.6
Matt Holliday	Cardinals*	5.6	Brett Gardner	Yankees	5.4
Josh Johnson	Marlins	5.6	Brian McCann	Braves	5.3
Miguel Cabrera	Tigers	5.5	Jay Bruce	Reds	5.3
Josh Beckett	Red Sox	5.4	Adrian Gonzalez	Padres	5.3
Mark Teixeira	Yankees	5.4	Zack Greinke	Royals	5.2
Pablo Sandoval	Giants	5.3	Chase Utley	Phillies	5.2
Derrek Lee	Cubs	5.2	Tim Lincecum	Giants	5.1
Matt Kemp	Dodgers	5	CC Sabathia	Yankees	5.1
Shin-Soo Choo	Indians	5	Stephen Drew	Diamondbacks	5.1

Appendix F
Top-50 Players by Wins Above Replacement Value

Ichiro Suzuki	Mariners	5	Dan Uggla	Marlins	5.1
Jason Bay	Red Sox	5	Joe Mauer	Twins	5.1
Dustin Pedroia	Red Sox	5	Scott Rolen	Reds	5
Ryan Braun	Brewers	4.9	Jayson Werth	Phillies	5
Nyjer Morgan	Nationals*	4.9	Jason Heyward	Braves	5
Jayson Werth	Phillies	4.9	Angel Pagan	Mets	4.9
Jason Bartlett	Rays	4.9	Daric Barton	Athletics	4.9
Joel Pineiro	Cardinals	4.8	Clayton Kershaw	Dodgers	4.8
Ryan Howard	Phillies	4.8	Ichiro Suzuki	Mariners	4.8
J.D. Drew	Red Sox	4.8	Roy Oswalt	- - -	4.7
Ian Kinsler	Rangers	4.7	Yovani Gallardo	Brewers	4.6
Justin Upton	Diamondbacks	4.6	Chad Billingsley	Dodgers	4.6
Casey Blake	Dodgers	4.6	Chase Headley	Padres	4.6

**All data obtained from fangraphs.com*

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