



Can't Buy Much Love: Why money is not baseball's most valuable currency

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Abstract

Talking heads, disgruntled general managers, and bar-goers have argued for years that professional baseball has a major competitive balance problem stemming from payroll inequities. This paper examines, and eventually rejects, that notion, relying on both a cross-sectional and longitudinal empirical analysis. Despite rising payroll inequality, the percent of variation in wins that can be explained by payroll (referred to throughout the paper as the “Win Buying Index”) has been declining relative to historical values and the NFL and NBA. This drop in the Win Buying Index can be attributed to a dramatic rise in the production of young, pre-free agency eligible players with severely suppressed salaries. As the pro-ready age for young athletes continues to fall and leagues continue to enact stricter regulations against substances that had historically disproportionately helped older players, policies that ensure cheap young labor—the league’s most valuable currency—will do more to reduce the effects of payroll on winning than restrictions on overall team salary.



Part One: Introduction

“Any rule or regulation that removes or tends to remove the power of money to make the difference in playing strength is a good rule.”

--Branch Rickey (1881-1965), Baseball General Manager, 1913-1955 [1]

Does Major League Baseball have a financially-driven competitive balance problem? The star-studded 2000 “Blue Ribbon” panel charged with investigating the issue—consisting of, among others, former Federal Reserve Chairman Paul Volcker—certainly thought so. The panel saw baseball as a fundamentally broken league, teetering on the brink of collapse under the tyranny of economic inequities. It recommended several drastic changes, including revenue sharing and luxury tax figures of 50 percent, stripping playoff teams of their first round picks in the subsequent draft, and aggressive franchise relocation of “low-market” teams. Its unequivocal conclusion was that the league’s policies “have produced neither the intended moderating of payroll disparities nor improved competitive balance.” [2]

This paper rejects the widely cited but relatively untested claim that money is perpetuating competitive imbalances in baseball. The panel’s methodology was flawed in several ways, including the failure to identify an appropriate outcome metric and a lack of adequate cross-sectional and longitudinal data. I will seek to remedy each of these issues, beginning by answering the most basic question of how we should measure the effects of payroll on winning.

If, as the panel asserts, money plays a critical role in determining teams’ success, then we should see a very tight historical relationship between payroll and winning. The easiest way to measure the tightness of this relationship is through the R-Squared of a linear regression of payroll on regular season wins: the higher the R-Squared, the greater the explanatory value of payroll on wins.¹ From now on, I will refer to this R-Squared as the **Win Buying Index** (or **WBI**), and measure it as a percent for the sake of easier conceptualization. For example, a WBI of 65% means that, for a given time period, payroll explains 65% of the variation of wins.²

My assumption is that Major League Baseball, like all major sports leagues, has a vested interest in maintaining a low (but non-zero) WBI. There should be at least some relationship between payroll and winning so that players have incentive to succeed and teams with depleted other resources (draft picks, farm systems, etc.) have some vehicle to compete. However, in general we want to minimize this impact so that teams with the highest ability and willingness to spend money don’t always win. In addition, if spending more were the only means to winning more, we would see insane salary bidding wars (even more than we already do) that could threaten the long-term financial solvency of the league.

The rest of this paper will serve as a laboratory for investigating the Win Buying Index through both a cross-sectional and longitudinal lens. In Part Two, I compare baseball’s win-buying figures from the past twelve seasons to those of its two main American sports rivals, the NFL and NBA. Although MLB’s WBI is higher than the other two leagues’, all three lie below 20%, implying a general trend of weak relationships between payroll and wins. Furthermore, the NFL and NBA’s lower WBI figures do not seem to be caused by lower payroll inequality, as the correlation between the two metrics is surprisingly *negative* for both leagues. In Part Three, I study baseball from a historical perspective and find that the institution of the draft and free agency dramatically decreased the WBI despite increasing payroll inequality, and that recent changes in the WBI can be explained almost completely by fluctuations in the dominance of young, cheap players relative to older, free agency-eligible ones. I conclude by recommending minimally invasive policies to improve less wealthy teams’ access to cheap young talent over major overhauls of the payroll system.

Part Two: MLB-NBA-NFL Cross-Sectional Analysis

We can think of the Blue Ribbon panel/conventional wisdom’s key conclusion as two-tiered: that baseball payrolls have an outsized effect on winning (i.e. that the league has a high Win Buying Index); and that this effect is more pronounced as payrolls become more unequal (i.e. that the WBI is especially high in years and eras with especially

¹ It is important to note that in all cases of this regression, I use standardized payroll and standardized wins to control for differences in payroll between sports and within one sport over time and the different number of games between sports. I have purposefully omitted postseason games because of the small sample size.

² Throughout the course of this paper, I will refer to three proprietary metrics: the Win Buying Index (WBI), Payroll Inequality Index (PII), and Youth Dominance Index (YDI). I will define each metric the first time that I use it, and have included the definitions, along with examples, in Exhibit 1 in the appendix.



high payroll inequality). I will first address these issues from a cross-sectional perspective, comparing MLB with the two other largest American pro sports leagues: the NBA and NFL.

My method will be to compare each sport's Win Buying Index to its **Payroll Inequality Index** (or **PII**): a measure of the dispersion of payrolls for a given time period calculated by dividing the standard deviation by the mean payroll. A higher PII denotes a higher payroll disparity, but unlike the WBI, PII figures have no intrinsic meaning.

My three-sport analysis spans the 2001 through 2012 seasons—the longest period for which I was able to find payroll data for all three leagues, and conveniently a period of relatively peaceful labor negotiations³. Exhibit 2.1 shows the WBI and PII for each sport. As would be expected from the Blue Ribbon theory, the least payroll-restrictive league (MLB) has the highest WBI and PII, and the most payroll-restrictive league (NFL) has the lowest of each. Trumpeters of conventional wisdom will be ready to call this a closed case: payroll restrictiveness lowers the Payroll Inequality Index, which in turn lowers the Win Buying Index—but there is far more to the story than meets the eye.

What should be more striking than the relative figures is the fact that all three sports' Win Buying Indices are below 20 percent. Even for baseball, over 80 percent of the variation in wins cannot be explained by payroll. Put another way, the relationship was not even tight enough to predict, with 95 percent certainty, that the 2013 Yankees (payroll: \$229 million) would win more games than the 2013 Astros (payroll: \$22 million). In fact, it wasn't even close: the Yankees' payroll would've had to have been a staggering *\$413 million* to predict a statistically significant difference in wins from the lowly Astros. As another means of comparison, similar studies of The English Premier League have found a Win Buying Index of between 80 and 90 percent⁴. Clearly, all three American leagues have been doing a lot more right than wrong when it comes to reducing the impact of money on winning.

Supporters of the Blue Ribbon panel's conclusions can still argue that baseball's WBI would be in the single digits rather than 17% if it adopted policies that artificially reduced payroll inequalities such as a salary cap. However, when we observe the historical relationships between the Win Buying Index and Payroll Inequality Index for the two sports that do have a salary cap (NBA and NFL, Exhibits 2.2.1-2.2.2), we find *negative* correlations (-0.29 for the NBA, -0.63 for the NFL)⁵. In other words, reduced payroll inequality does not seem to be the cause of the NBA and NFL's lower WBI's.

We should not infer from these data that adopting a salary cap will *raise* baseball's WBI—yearly data of just 29 to 32 teams for only 12 years is far too noisy, and we don't have appropriate pre- and post-salary cap data for the NBA and NFL—but rather that there is a lack of clear evidence that salary caps are the main reason for the gap in WBI between baseball and the other two sports. It is possible that basketball and football simply have lower “steady state” WBI's because of exogenous (i.e. non-payroll-related) factors such as a higher likelihood of injury and shorter seasons. The most appropriate conclusion from these data should be that baseball has done an admirable job keeping its WBI in the proverbial ballpark of one league in which a single injury can derail a team's entire season (NBA) and another that plays almost 150 fewer games and is therefore much more susceptible to fluke performances (NFL).

Part Three: MLB Longitudinal Analysis

So far, we have only viewed MLB's Win Buying Index in one static 12-year period. We still don't know where this recent WBI snapshot ranks relative to other periods in baseball history, or what factors are most responsible for differences between those periods.

Baseball's most important policy change for the purposes of this paper was the adoption of free agency in 1977. Under the Reserve Clause system that preceded free agency, the team that initially signed a player had complete control over his contract in perpetuity. After each season, a team would offer a player whatever it felt like paying him, and his only choice was to accept that contract or retire. The 1977 rule shift kept players under team control for their first six years in the majors, after which time the players could offer their services on the open market to the highest bidder⁶.

³ For the NBA and NFL, all seasons are denoted in the year in which they began (i.e. the 2001-02 season is labeled as 2001). The only regular season labor stoppage during this period was the NBA lockout that shortened the 2011-2012 season to 66 games.

⁴ One such study was reported by Simon Kuper and Stefan Szymanski in their book *Soccernomics* [3]. It studied Premier League and Championship League teams from 1998 through 2007, with the dependent variable being league position rather than wins. The R-Squared of that relationship was 0.89.

⁵ Ideally, I would have measured the effects a salary cap by comparing WBI and PII figures before and after its adoption, but unfortunately payroll data for the pre-salary cap periods in both the NBA and NFL was unavailable.

⁶ More specifically, the team has full control over a player's salaries during his first three years of service. For his fourth through sixth seasons, he enters the process of salary arbitration, in which the team still has right of first refusal over the player's rights, but his salary rises to reflect his performance relative to his peers. Those salaries are still usually well



Exhibit 3.1 shows the Win Buying Index and Payroll Inequality Index before and after the advent of free agency⁷, with the latter era broken into six-year periods starting in 1978⁸. Not surprisingly, the Payroll Inequality Index was lower during the Reserve Clause Era (24%) than in any period in the Free Agency Era, as the lack of a free market meant that the best players did not command much more salary than the worst.

According to the Blue Ribbon theory, we should expect the Reserve Clause Era—with its low payroll inequality—to yield the lowest Win Buying Index, but in fact we find the exact opposite: the Reserve Clause Era had a *higher* WBI than any six-year period in the Free Agency Era by a wide margin (40% to 26%). How did this happen?

During the Reserve Clause Era, teams held all the negotiating power once a player was under contract, but only the wealthiest clubs had the ability to establish extensive scouting networks and offer hefty signing bonuses to teenage stars. Rather than help poorer teams by suppressing salaries, the Reserve Clause simply allowed wealthier teams to pay their best players big money only once: at the time of the initial signing.

Acquiring—not retaining—star players was the chief concern for poorer teams. Of course, there were many examples of teams trading good young players for cash out of necessity, but the far greater issue was that the best players of the Reserve Clause Era—DiMaggio, Williams, Musial, Mantle, etc.—signed with one of the wealthier teams as a teenager and stayed with that team for life.

The advent of the first-year player draft in 1965 represented a complete paradigm shift in terms of player acquisition. Suddenly, wealthy teams could not simply sign all the best high school and college players; they had to wait their turn in the draft, just like everyone else⁹. The institution of free agency twelve years later has allowed teams to bid for players on the open market, but not until the players complete their sixth major league season. Before that point, players are effectively still controlled by the team that drafted them at greatly suppressed salaries.

The increased access to young talent through the draft—coupled with six years of player control—explains the dramatic drop in the average WBI from the Reserve Clause Era to the Free Agency Era. It also reveals a major flaw in the Blue Ribbon theory, which wrongly assumed that the retention of veteran players—compromised by free agency—was more important than the acquisition of young ones—enabled by the draft.

These policies do not, however, explain the bizarre relationship *within* the Free Agency Era between the WBI and PII. Between 1978 and 1995, the WBI-PII correlation was a near-perfect 0.98, as win-buying followed as payroll inequality's trend downward. Suddenly, from 1996 through 2013, the correlation flipped almost completely on its head to -0.54. The most recent six-year period yielded one of the lowest WBI's in league history—one on par with the NBA and NFL—despite a near-record high PII. Again, adhering by the book to the Blue Ribbon theory leaves us scratching our heads.

As mentioned above, the key competitive balance advantage that MLB has bestowed on less wealthy and successful teams is the ability to acquire cheap young players and keep them for six years. However, the power that this advantage wields is contingent upon the productiveness of said young players. If players are not producing their best seasons until after they reach free agency, then the initial six years of team control do not mean much. Conversely, if young players are dominating the league relative to their veteran counterparts, then the value of free agency—and thus the ability to “buy” wins—is diminished.

The question of how dominant young players are relative to veteran ones is an empirical one, and I will attempt to answer it through the creation of a new statistic: the **Youth Dominance Index** (or **YDI**). The YDI measures the

below the value that the player would command in the open market. Since it is very rare for teams to not resign good players during their arbitration years, I will consider the player's first six years as “team-controlled” for the purposes of this paper.

⁷ Due to the paucity of payroll data in the Reserve Clause era, the figures for that period are a composite of the following seasons: 1929, 1933, 1939, 1943, 1946, 1950, and 1952-1956. While it is dangerous to lump together seasons spanning 28 years into one period, there were no major policy changes during this stretch, and my goal is to analyze the entire Reserve Clause era regardless of decade.

⁸ I used six-year periods for the post-free agency period for two reasons. First, I needed a large enough sample size of individual seasons to combat the general flukiness inherent to sports, and I wanted equally-spaced intervals. Second, the six-year periods corresponded well with major changes in the Collective Bargaining Agreement, so each period acts as a proxy for different labor periods.

⁹ As will be discussed later, one weakness of the draft is that it only applies to American players. International players, who make up an increasingly larger percentage of the league, are effectively free agents and can be signed by any team for any amount of money starting at age 16 (though the system is more complicated for specific countries, most notably Japan).



percent of all “dominant” seasons in a given time period that are produced by players in their first six years of service¹⁰. The higher the figure, the more dominant salary-suppressed players are relative to free market players.

We should expect to see a negative correlation between the YDI and WBI—as young, salary-suppressed players become more dominant, the explanatory value of payroll on winning should decrease—and the data from Exhibit 3.2 bear this out. The historical correlation of -0.82 has only strengthened over time: in the past 18 years, it rounds to a perfect -1.00. The key conclusion is that youth dominance, not payroll inequality, has become the main indicator of the explanatory value of payroll on wins.

How does the YDI help to explain the bizarre shift in the PII-WBI relationship starting in 1996? Figure 3.3 shows the historical correlations between the YDI and PII. Through the first 18 years of free agency, the two variables were strongly negatively correlated (-0.85), which makes sense from one theoretical standpoint: as young players become more dominant, they should take up a larger share of roster spots, and therefore decrease overall payrolls and payroll inequality.

Over the past 18 years, however, teams have changed course, as payroll inequality has risen along with youth dominance (correlation: 0.56). Or, more accurately, *some* teams have changed course. Payroll inequality measures, in large part, extreme performance: how much more are the most profligate teams spending than the stingiest? The post-1996 period has seen a huge growth on the top end of the payroll spectrum, as a handful of wealthy teams continue to bid up the prices of free agents. Between 1978 and 1995, not one team had a payroll at least 2.5 standard deviations above the mean. Between 1996 and 2013, it happened 11 times.

Given the increase in the production of young players, is this decadent spending behavior rational? Quite possibly. Since many of these high-spending teams have pillaged their farm systems in trades and forfeited draft picks for previous free agent signings, overspending on free agents has become a method of last resort. These teams are certainly well aware of the diminishing value of free agents, but many have left themselves with little other choice but to engage in this vicious cycle. In a funny twist of fate, high-revenue teams with a lack of young talent are forced to spend exorbitantly to compete with teams with a fraction of the financial resources but an abundance of pre-free agency stars.

As a result of this behavior, we are currently witnessing a stunning polarization of productivity relative to salary. For all seasons since 2002, FanGraphs.com has approximated how many dollars a player was worth by multiplying his Wins Above Replacement by the price that teams were paying, on average, for a free agent “win” in the previous offseason. By comparing these figures to the players’ actual salary, we are able to determine the most “overpaid” and “underpaid” seasons from 2002 to 2013 (see Exhibits 3.4.1 and 3.4.2). Fifteen of the top 25 underrated seasons and 16 of the top 25 overrated seasons (highlighted) occurred between 2011 and 2013. A trend toward either underpaying or overpaying players should lead to a decrease in the WBI—which essentially measures how closely individually salaries are aligned to player performance—so it is no wonder that the current trend toward both underpaying *and* overpaying has coincided with a precipitous drop in our key outcome metric.

Part Four: Conclusions, Limitations, Predictions, and Recommendations

Conclusions

At the beginning of this paper, I noted that my research would disprove the Blue Ribbon panel’s conclusion that baseball has not sufficiently diminished payroll disparities or the effect of money on winning. I will now amend that statement to give the panel credit for getting half of its conclusion right (albeit the less important half). Various changes to the Collective Bargaining Agreement have indeed not stopped payroll inequality from rising. Yet rather than increase the reliance of money on winning, this rising inequality has had a decidedly ambiguous (and possibly *negative*) effect on the league’s WBI. This counterintuitive PII-WBI relationship has held true in the NBA and NFL as well, though again I caution against definitively inferring causality.

While payroll inequality has done a poor job of predicting baseball’s WBI in recent years, the success of young players (or YDI) has been a fabulous predictor. This makes sense when we consider that the theoretical effect of increasing payroll inequality on the WBI is ambiguous: the direction and magnitude of the effect depends on how accurately salaries predict performance. Conversely, the effect of increasing youth dominance on the WBI is clear: as young, salary-suppressed players account for a larger share of league wins, payroll’s explanatory value on wins diminishes.

Baseball is now in the midst of a “golden age” of win-buying—rivaled only by the collusion-tainted late 1980s—in which the effect of payroll on winning continues to decline. This golden age has occurred in spite of (and perhaps *because of*) increased payroll inequality, spurred by the increasing dominance of young players whose salaries reflect only a minuscule fraction of their intrinsic value. Its WBI still lies above the NBA’s and NFL’s, but this is at least

¹⁰ “Dominant” seasons are defined as the top 1000 hitter and pitcher WAR seasons since 1900. These cutoffs are roughly 6.0 for hitters and 5.0 for pitchers, largely considered MVP- and Cy Young-caliber seasons.



partially attributable to idiosyncratic factors inherent to those two leagues such as injuries and season length. Rather than be the whipping post for panels and pundits, baseball should be viewed as a model for other sports leagues looking to reduce the effects of payroll on winning while maintaining labor peace and ensuring long-term solvency.

Limitations

It is important to note the limitations of this research so as to not draw inappropriate conclusions. First, these data pertain only to regular season performance, and should not be extrapolated to predict which teams are built to win in the playoffs. Second, all data are team-agnostic, meaning that we cannot make conclusions about individual teams' ability to "buy" wins. Third, this is not a study of competitive balance for its own sake, but rather of balance in the context of team payrolls. A league in which the same teams win every year with low payrolls—which would certainly present its own set of challenges—is considered "good" by these metrics. Lastly, this is not a marginal analysis in that it does not attempt to measure how many million dollars it will take to buy an additional win on the free agent market. The way to think about all four of these points in conjunction is that this paper is meant to evaluate the strength of the relationship between payroll and winning on a league-wide level over periods of several years. I strongly caution against applying these conclusions to any other conditions or smaller swaths of data.

Predictions

Will baseball's "golden age" of low win-buying continue indefinitely? The answer certainly depends on whether the league can sustain such high levels of youth dominance. No one can predict the timing or magnitude of the next drop in the YDI, and there are conflicting factors that make prognosticating that much more difficult. On the one hand, improving training and coaching of high school and college players continues to reduce the age of pro-readiness, and teams are increasingly willing to play young players and even sign them to long club-friendly deals—factors that should increase the YDI. On the other hand, advances in medical science and strength and conditioning have extended the prime of players' careers, which should decrease the YDI.

From a cynical (but perhaps realistic) perspective, the tiebreaker may be the league's policy toward banned substances, which are widely assumed to give a greater advantage to older players trying to maintain elite levels of performance. If MLB adopts stricter policies—either by banning more substances or by establishing harsher penalties—the dominance of young players may remain intact for the foreseeable future. Is it simply a coincidence that the six-year period that coincided with the height of the so-called "Steroid Era" (1996-2001) produced the lowest Youth Dominance Index of any time period studied? I will leave the reader to draw his or her own conclusions.

Recommendations

The most recent MLB Collective Bargaining Agreement, effective for the 2012 through 2016 seasons, included several clever WBI-reducing measures, but in many regards it did not go far enough. Rather than propose a reinvention of the wheel, my recommendations center around tweaking and strengthening these existing measures:

Current Policy	Recommended Change	Rationale
Taxes for teams that exceed signing bonus pools for international free agents	Include all international players in the annual draft (as is the policy in the NBA), subject to the same signing rules as American players	Enabling equal initial access to talent is a pillar to maintaining a low WBI, and the impact of international players will only grow with the globalization of the game
Taxes and potential penalties for teams that exceed signing bonus slotting for players taken in the first 10 rounds of the draft	Mandate specific signing bonuses for each pick and forbid teams from exceeding them	Players should have no chance to scare teams away from taking them for fear of an astronomical asking price, and taxes do not go far enough
Free agent compensation for teams whose players reject a "qualifying offer" of a one-year contract equal to the average salary of the top 125 paid players (around \$14 million in 2014)	Revert to the imperfect but passable "Type A" and "Type B" compensation system, with the qualifying metrics updated to reflect sabermetric measurements of player performance	Compensation for free agents should depend on the quality of the player lost, not teams' ability to pay their free agents an eight-figure salary

It is worth noting that versions of these recommendations were also part of the remedies proposed by the Blue Ribbon panel—in addition to several other invasive, impractical measures that would surely have led to labor unrest. Where the Blue Ribbon panel—and many other pundits and fans—saw a falling sky that required major intervention, this research reveals a much sunnier outlook that warrants small but meaningful adjustments. Ensuring less wealthy teams access to cheap, young talent should be the goal for the foreseeable future. Until we can be statistically confident



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that one team that spends \$200 million more than another will win more games, it will be hard to consider money a major problem in baseball. Young talent, not deep pockets, is the ultimate trump card in the MLB of today and tomorrow.



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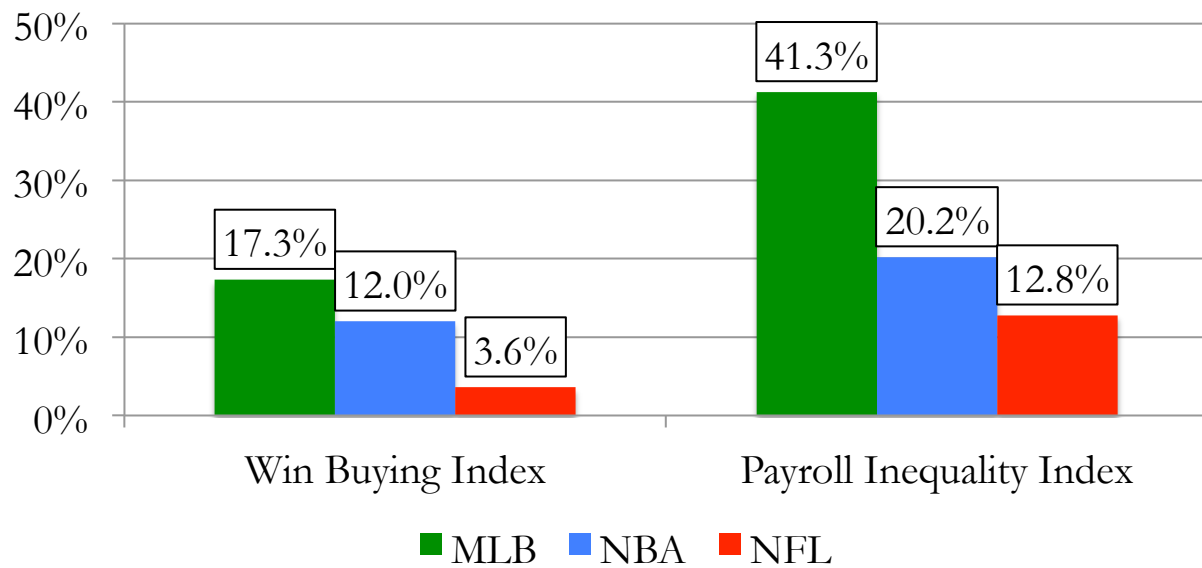


Appendix

Exhibit 1: Definitions of key metrics

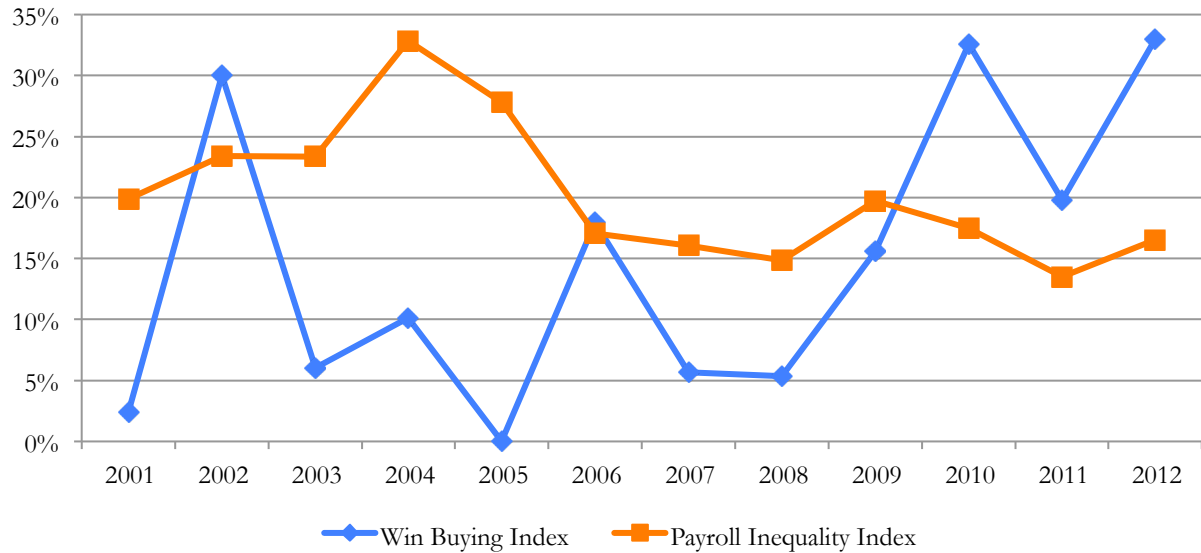
Name (abbreviation)	Calculation	Interpretation	Example
Win Buying Index (WBI)	R-Squared of linear regression of standardized payroll on standardized wins	How much of the variation in wins can be explained by payroll for a given time period (0%: payroll doesn't explain anything about wins; 100%: payroll explains all the variation in wins)	WBI of 25% means that, for a given time period, payroll explains 25% of the variation in wins (the other 75% is due to factors unrelated to payroll)
Payroll Inequality Index (PII)	$\frac{\text{Standard Deviation of Payroll}}{\text{Average Payroll}}$	How unequally distributed are payrolls for a given time period (larger value = more unequal)	No intrinsic meaning (useful for comparisons between eras and for explaining WBI)
Youth Dominance Index (YDI)	Percent of all-time top 1000 hitter and pitcher WAR seasons produced by pre-free agency players (six or fewer years of service time) for a given time period	How dominant are young players (who have restrictions on their salary) relative to free agency eligible players (who have no restrictions)	YDI of 60% means that, for a given time period, pre-free agency eligible players made up 60% of the "elite" seasons

**Exhibit 2.1: Win Buying Index (left) and Payroll Inequality Index (right), 2001-2012
 MLB, NBA, NFL**





**Exhibit 2.2.1: NBA Yearly Payroll Inequality Index (Orange),
Win Buying Index (Blue), 2001-2012**
Correlation: -0.29



**Exhibit 2.2.2: NFL Yearly Payroll Inequality Index (Orange),
Win Buying Index (Red), 2001-2012**
Correlation: -0.63

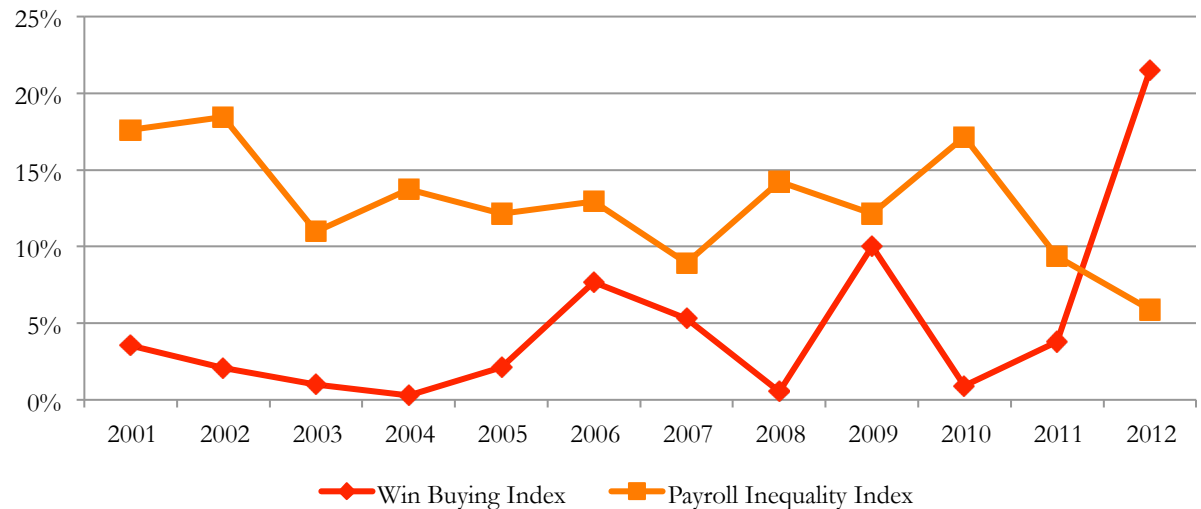




Exhibit 3.1: Payroll Inequality Index, Win Buying Index

Overall Free Agency Era Correlation: 0.64
1978-1995: 0.98
1996-2013: -0.54

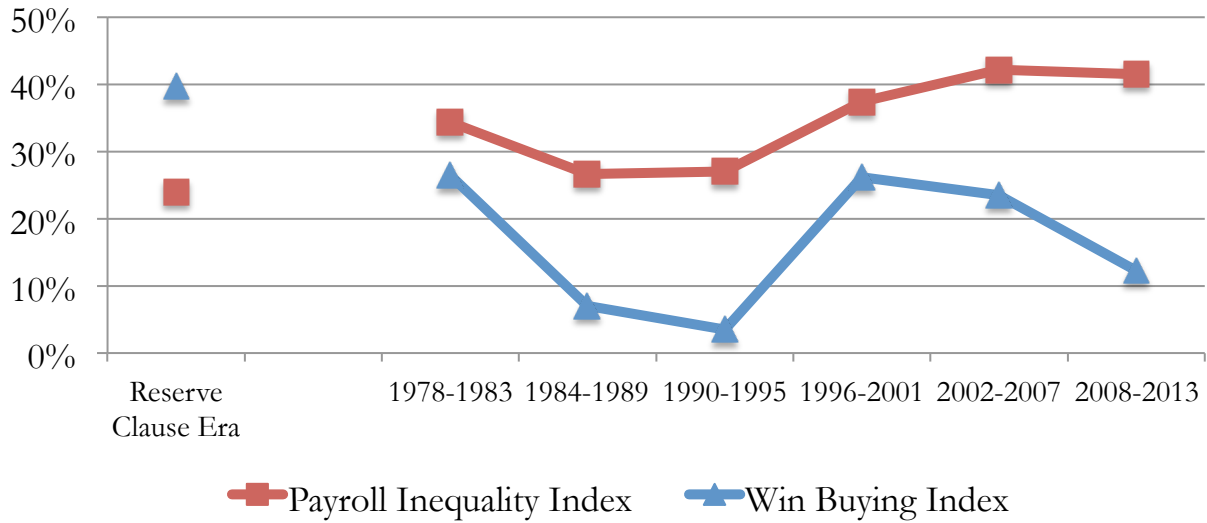




Exhibit 3.2: Youth Dominance Index, Win Buying Index

Overall Free Agency Era Correlation: -0.82

1978-1995: -0.73

1996-2013: -1.00

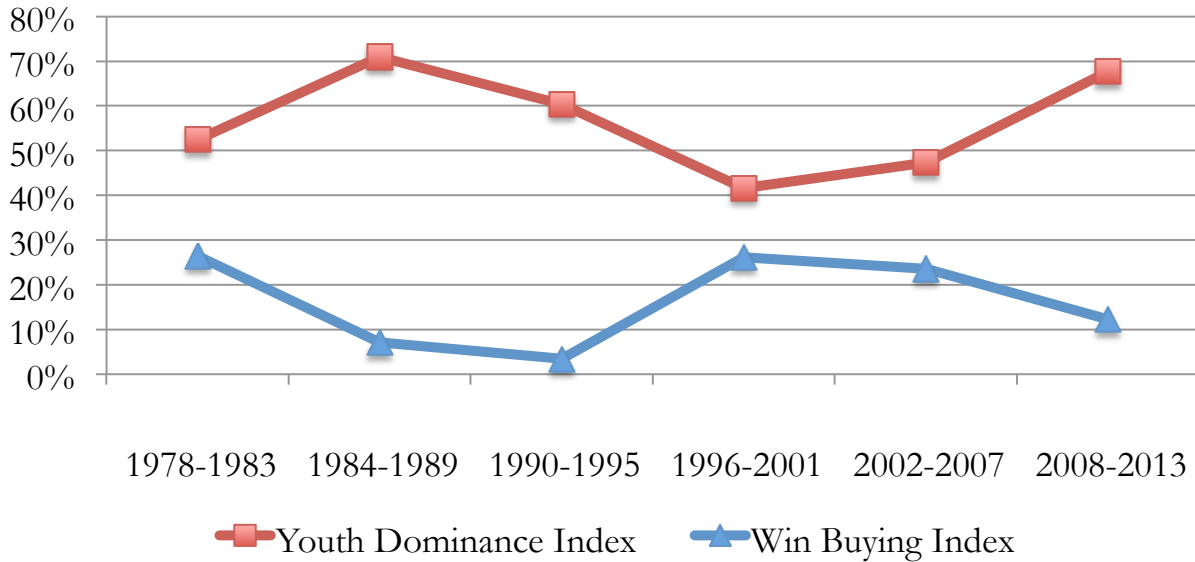


Exhibit 3.3: Youth Dominance Index, Payroll Inequality Index

Overall Free Agency Era Correlation: -0.45

1978-1995: -0.85

1996-2013: 0.56

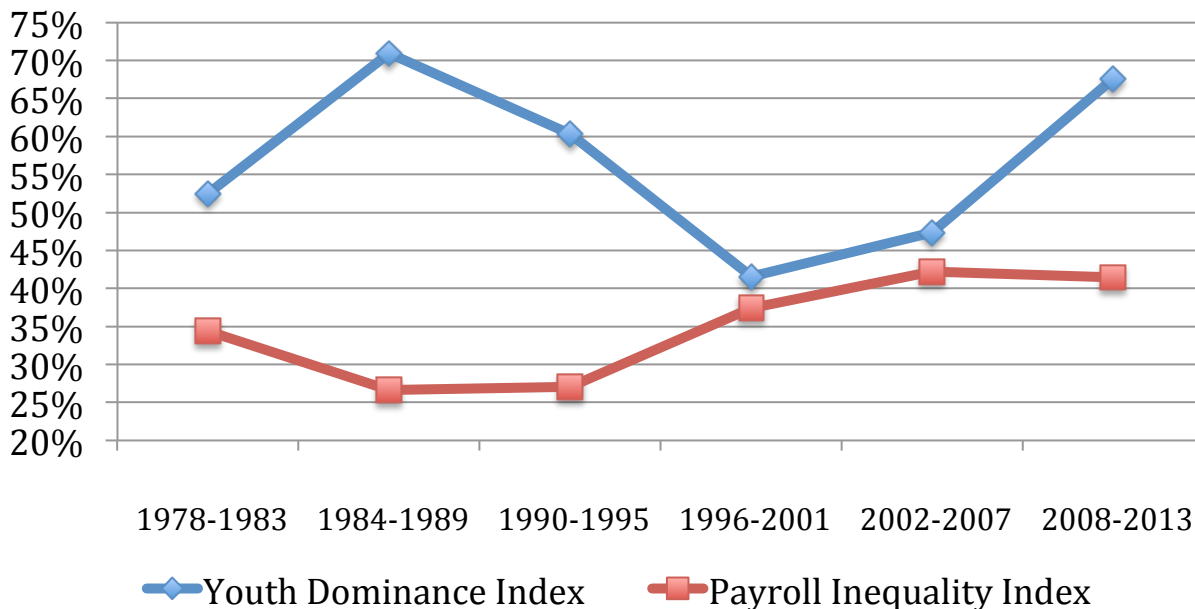




Exhibit 3.4.1: MLB Top 25 Underpaid Players, 2002-2013

#	Name	Year	Age	Salary	\$ WAR	Salary - \$ WAR	Contract Type
1	Mike Trout	2013	21	\$0.5	\$52.1	-\$51.6	Pre-Arbitration
2	Mike Trout	2012	20	\$0.5	\$44.9	-\$44.4	Pre-Arbitration
3	Jacoby Ellsbury	2011	27	\$2.4	\$41.1	-\$38.7	Arbitration
4	Josh Donaldson	2013	27	\$0.5	\$38.6	-\$38.1	Pre-Arbitration
5	Ben Zobrist	2009	28	\$0.4	\$38.2	-\$37.8	Pre-Arbitration
6	Zack Greinke	2009	25	\$3.8	\$41.0	-\$37.3	Arbitration
7	Andrew McCutchen	2013	26	\$4.7	\$41.2	-\$36.5	Arbitration Contract
8	Matt Carpenter	2013	27	\$0.5	\$35.1	-\$34.6	Pre-Arbitration
9	Buster Posey	2012	25	\$0.6	\$34.6	-\$34.0	Pre-Arbitration
10	Carlos Gomez	2013	27	\$4.3	\$38.1	-\$33.8	Arbitration
11	Evan Longoria	2009	23	\$0.6	\$33.9	-\$33.4	Pre-Arbitration
12	David Wright	2007	24	\$1.3	\$34.5	-\$33.3	Pre-Arbitration
13	Tim Lincecum	2009	25	\$0.7	\$33.6	-\$33.0	Pre-Arbitration
14	Justin Verlander	2009	26	\$3.7	\$36.5	-\$32.8	Arbitration
15	Hanley Ramirez	2008	24	\$0.4	\$32.3	-\$31.9	Pre-Arbitration
16	Paul Goldschmidt	2013	25	\$0.5	\$32.0	-\$31.5	Pre-Arbitration
17	Evan Longoria	2013	27	\$2.5	\$34.0	-\$31.5	Pre-Arbitration Contract
18	Tim Lincecum	2008	24	\$0.4	\$31.7	-\$31.3	Pre-Arbitration
19	Curtis Granderson	2007	26	\$0.4	\$31.7	-\$31.3	Pre-Arbitration
20	Manny Machado	2013	20	\$0.5	\$31.1	-\$30.6	Pre-Arbitration
21	Matt Kemp	2011	26	\$7.1	\$37.7	-\$30.6	Arbitration Contract
22	Chris Davis	2013	27	\$3.3	\$33.9	-\$30.6	Arbitration
23	Josh Hamilton	2010	29	\$3.3	\$33.5	-\$30.3	Arbitration
24	Matt Harvey	2013	24	\$0.5	\$30.4	-\$29.9	Pre-Arbitration
25	Andrew McCutchen	2012	25	\$0.7	\$30.5	-\$29.8	Pre-Arbitration

Highlighted seasons are from 2011 to 2013. All dollar figures in millions.



Exhibit 3.4.2: MLB Top 25 Overpaid Players, 2002-2013							
#	Name	Year	Age	Salary	\$ WAR	Salary - \$ WAR	Contract Type
1	Vernon Wells	2013	34	\$24.6	-\$3.8	\$28.4	Free Agent Contract
2	Alex Rodriguez	2013	37	\$29.0	\$2.4	\$26.6	Free Agent Contract
3	Adam Dunn	2011	31	\$12.0	-\$13.4	\$25.4	Free Agent Contract
4	Vernon Wells	2011	32	\$26.2	\$0.8	\$25.4	Free Agent Contract
5	Carlos Lee	2010	34	\$19.0	-\$6.0	\$25.0	Free Agent Contract
6	Ryan Howard	2012	32	\$20.0	-\$4.9	\$24.9	Free Agent Contract
7	Roy Halladay	2013	36	\$20.0	-\$4.1	\$24.1	Free Agent Contract
8	Mark Teixeira	2013	33	\$23.1	-\$0.9	\$24.0	Free Agent Contract
9	Michael Young	2012	35	\$16.2	-\$7.2	\$23.4	Free Agent Contract
10	Barry Zito	2013	35	\$20.0	-\$2.9	\$22.9	Free Agent Contract
11	Jason Bay	2012	33	\$18.1	-\$4.3	\$22.4	Free Agent Contract
12	Matt Kemp	2013	28	\$20.3	-\$2.1	\$22.4	Free Agent Contract
13	Vernon Wells	2012	33	\$24.2	\$2.0	\$22.2	Free Agent Contract
14	Richie Sexson	2007	32	\$15.5	-\$6.3	\$21.8	Free Agent Contract
15	Paul Konerko	2013	37	\$12.5	-\$9.1	\$21.6	Free Agent Contract
16	Jason Giambi	2007	36	\$23.4	\$2.0	\$21.4	Free Agent Contract
17	Barry Zito	2011	33	\$18.5	-\$2.9	\$21.4	Free Agent Contract
18	Sammy Sosa	2005	36	\$17.0	-\$4.3	\$21.3	Free Agent Contract
19	Alex Rodriguez	2012	36	\$30.0	\$8.7	\$21.3	Free Agent Contract
20	Jose Guillen	2009	33	\$12.0	-\$9.1	\$21.1	Free Agent Contract
21	Bernie Williams	2005	36	\$12.4	-\$7.7	\$20.1	Free Agent Contract
22	Andruw Jones	2008	31	\$14.7	-\$5.3	\$20.0	Free Agent Contract
23	Barry Bonds	2005	40	\$22.0	\$2.1	\$19.9	Free Agent Contract
24	Richie Sexson	2008	33	\$15.5	-\$4.4	\$19.9	Free Agent Contract
25	Derek Jeter	2013	39	\$16.7	-\$2.9	\$19.6	Free Agent Contract

Highlighted seasons are from 2011 to 2013. All dollar figures in millions.



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References

[1] <https://class.coursera.org/globalsportsbusiness-001/lecture/index>

[2] Richard C. Levin, George J. Mitchell, Paul A. Volcker and George F. Will. “The Report of the Independent Members of the Commissioner’s Blue Ribbon Panel on Baseball Economics”, July 2000, p. 1.

[3] Simon Kuper and Stefan Szymanski. *Soccernomics: Why England loses, why Spain, Germany, and Brazil win, and why the US, Japan, Australia, Turkey—and even Iraq—are destined to become kings of the world’s most popular sport*. Nation Books, New York, NY, 2012. p. 13.

General Resources

MLB/NBA/NFL:

<http://usatoday30.usatoday.com/sports/salaries/index.htm> (recent payroll data for all 3 leagues)

MLB:

http://mlb.mlb.com/mlb/downloads/blue_ribbon.pdf (Blue Ribbon panel report)

<http://www.baseballchronology.com/Baseball/Teams/Background/Financials/> (historical payroll data)

<http://www.baseball-reference.com/leagues/> (historical team wins)

http://www.baseball-reference.com/bullpen/Free_agent_reentry_draft (collective bargaining literature)

http://mlb.mlb.com/news/article.jsp?ymd=20041208&content_id=919874&vkey=perspectives&fext=.jsp&c_id=mlb (collective bargaining literature)

<http://sabr.org/research/mlbs-annual-salary-leaders-1874-2012> (historical annual player salary leaders)

<ftp://ftp.bls.gov/pub/special.requests/cpi/cpi.txt> (US CPI data, used to calculate inflation-adjusted dollars)

NBA:

<http://www.basketball-reference.com/leagues/> (historical team wins)

NFL:

<http://profootballtalk.nbcsports.com/2010/09/19/team-by-team-salary-cap-numbers-if-there-were-a-salary-cap/> (2010 payroll data)

http://sports.espn.go.com/nfl/news/story?page=nfl_labor_history (collective bargaining literature)

<http://www.pro-football-reference.com/years/> (historical team wins)

Data sets used to create exhibits available upon request.