

THE ROI OF ESCALATING PLAYER SALARIES IN
MAJOR LEAGUE BASEBALL: THE IMPACT OF
PAYROLL ON FRANCHISE VALUATION

by

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ABSTRACT

This study focused on the impact of payroll investment on the intrinsic value of Major League Baseball franchises. Specifically, I examined how club owners allocate capital to their most crucial and fundamental investment – players – and how payroll impacts teams’ financial and on-field performance. I addressed this question empirically first by examining the financial trends of the MLB as a whole and the thirty organizations within. Given these observations, I created a simple five-variable model of team revenue. Because outstanding research has indicated that revenue should be the basis for valuation of professional sports teams, this model was meant to reflect the strength of payroll as a predictor of franchise value relative to other key variables, particularly market size, winning percentage, club tradition, and home attendance. The results of my analysis supported my hypothesis that payroll would be a strong and statistically significant predictor of revenue and, therefore, value, so long as franchises are to be valued based on their revenues. Implications for owners, researchers who have studied the business of baseball, and fans of the sport in general are discussed.

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INTRODUCTION

The game of baseball in the United States is highly popular in terms of both consumer interest and professional research. In Ken Burns' 1994 documentary series, *Baseball*, the narrator describes the sport as “an American odyssey that links sons and daughters to fathers and grandfathers.” Behind this timeless game, though, lies a complex and powerful commercial enterprise.

Perhaps the best example of the scope of baseball's economic prowess is the 2011 sale of the then-struggling Los Angeles Dodgers – a deal reportedly worth \$2.15 *billion*, more than twice that of any franchise sale preceding it (Dixon, 2013). The Dodgers have since gone on a spending spree, acquiring high-ticket players such as Adrian Gonzalez and Zack Greinke, and in the process the franchise has more than doubled its payroll distributions, from \$95 million in 2012 to a projected \$235 million heading into the 2014 season (Blum, 2014). Baseball remains, of course, a beautiful game and one of the great cultural creations in United States history, but, as Burns' documentary went on to describe, baseball also “reflects a host of age-old American tensions: between workers and owners, scandal and reform, the individual and the collective.” Given the absence of a salary cap and the availability of more than a century of documented player statistics, which allow for precise analysis of the revenue-generating ability of any given player, Major League Baseball provides the opportunity for revelatory analysis of its labor market and the compensation trends therein. Consequently, literature on professional baseball is extensive.

Existing literature frequently explores baseball as a business, seeking to understand the drivers of the league's revenues and profitability. Due to the publicity of

escalating player salaries, many professionals have researched how to assess the monetary value of players to their respective franchises to determine the fairness of their compensation. Competitive balance in baseball has also been the subject of extensive research, primarily because the MLB is noticeably less “competitive” than other professional sports leagues due to the great disparity between the financial clout and on-field success of different clubs. Analysts and fans want to understand why success in the league is concentrated among relatively few teams, why revenue-generating ability and profitability vary so greatly, and why some teams invest substantially more in obtaining and retaining high-quality players than others. Each year, *Forbes* publishes a widely referenced article that provides financial data for each of the MLB teams as well as an estimate of each franchise’s value based on a multiple of that club’s revenue. Other research exists that examines the valuation of professional sports franchises, but relative to the extensive body of literature on baseball, research on this topic is limited. What existing literature and valuation models do not explicitly address is the relationship between team payrolls and franchise value, specifically, the extent to which payroll affects the value of an organization. The purpose of my research is to delve more deeply into this concept.

In this paper, I review the relationship between the increasing salaries of professional baseball players and the effect that they have, or should have, on the value of their respective franchises. I explore whether these increasing salaries drive franchise success (and, therefore, value), or whether value created from another source simply allows these franchises to pay athletes more. I intend to use my conclusions to make a more general connection between professional baseball compensation and the impact of

corporate salaries on firm value. Further, I hope that my conclusions will be able to shed some light on the effectiveness of outstanding valuation models in capturing the impact that player salaries have on franchise value. Existing theory displays a noticeable departure from traditional valuation methodology, so I will address this departure and the reasons why it may or may not be the most accurate approach to franchise valuation. This study should be of particular interest to those who have researched or are intrigued by the business of baseball, those concerned with the trend of sharply escalating salaries among major league players, owners and managers whose on-field and economic success depends heavily on their investment in players, and baseball fans in general.

These questions are primarily addressed empirically from a couple of different angles using data from 2006 to 2013. First, I examine the financial foundation of the MLB and its franchises to formalize a better understanding of the drivers of value in professional baseball organizations. I also provide analysis of individual teams that I believe present informative examples of performance trends, both financial and on-field, and how these trends may impact, or be impacted by, how these teams invest in players. Finally, I formulate test hypotheses to determine the impact that payroll and several other variables have on franchise valuations, and vice-versa. These variables include market sizes, current and past winning percentages, current and past attendance numbers, payments and receipts from revenue sharing, regional sports networks, stadium age and quality, franchise tradition, and player contract values. Ultimately, I present a multivariate model of revenue that attempts to explain the impact of payroll on franchise value in conjunction with, and compared to, other relevant variables.

LITERATURE REVIEW

Baseball as a Business

The game of baseball, regarded as “America’s pastime,” has been around for over a century and a half, and professional baseball in the United States has grown into a significant economic entity. As in any growing industry, the revenues and values of baseball’s franchises have escalated greatly. Much research exists that analyzes and draws similarities between the MLB and businesses in general. For example, franchise revenues rely heavily on the quality of teams’ fixed assets (stadiums) to attract customers (fans). Lewis (2008) described baseball teams’ inventory (seats) as similar to that of airlines or hotels in that it is both fixed and perishable. Like any business, baseball clubs seek to generate revenues by selling their service (entertainment) through a number of avenues. Lee and Chun (2002) presented the primary revenue sources for the MLB: ticket sales, broadcast rights fees, luxury boxes and club seats, concessions, advertising, memorabilia, and membership fees. They predicted that these revenues sources will continue to grow to historical levels – a prediction that has certainly come to fruition. Revenues for the league as a whole have grown 50% since 2006, from \$4.7 billion to nearly \$7.1 billion. In order to generate these revenues, franchises incur substantial costs as well, such as stadium overhead, advertising expenses, and, most importantly, player salaries.

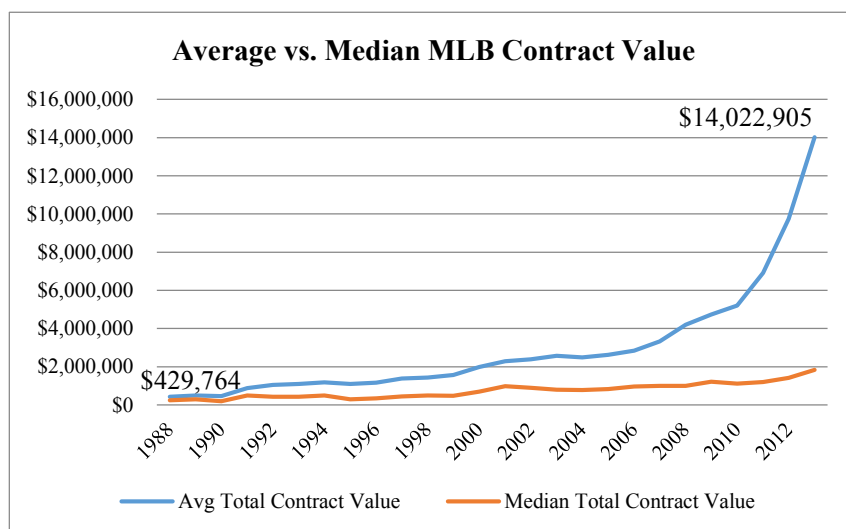
The Labor Market in Major League Baseball

Lewis (2008) defined a team’s payroll as its investment in terms of on-field success and management of long-term consumer demand. Just as corporations strive to achieve their goal (value creation) by investing capital to generate returns, baseball

organizations seek to achieve success primarily by making massive monetary investments in players, with the expectation of ultimately realizing a return, whether through team success, financial success, or both.

Harry Wright is credited with having originally established baseball as a business, turning what began as a just a game into an occupation and primary source of income for players. In 1867, his team, the Cincinnati Red Stockings, became the first to pay its players a salary. The highest paid player was Harry's brother, George, a shortstop who made a tidy sum of \$1,400 a season – seven times the average working man's wage (Burns, 1994). Heading into the 2014 MLB season, the highest paid player was Dodgers pitcher Zach Greinke, expected to receive a salary of \$26 million. Thus, the salary growth of baseball's richest player equates to a compound annual growth rate (CAGR) of 7.0% over the course of 147 years. I would contend that few other things have seen such remarkable and persistent growth. The scope of modern players' compensation has resulted in substantial literary discussion of the nature, dynamics, and efficiency of the MLB labor market.

The explosion in player salaries truly began with the establishment of free agency in professional baseball in 1976. The free agency rule permits



players with at least six years of MLB experience to sell their services to the highest bidding franchise. Owners began rapidly expanding their investments in players, but they soon found themselves with over-inflated payrolls and under-achieving free agent acquisitions. Finding it difficult to obtain their desired compensation in the free agent market, many players began engaging in arbitration as a solution. In arbitration, owners and players present their cases to an independent arbiter who makes a final ruling on the player's compensation (Lackritz, 1990). Depken and Wilson described contract negotiations as a process that involves an interaction in which players and their agents seek to obtain as high a salary as possible, while team owners seek to pay the least amount of salary possible. Lackritz (1990) ascertained that there needs to be a model to evaluate a player's true value and appropriate compensation. The issues and inefficiencies of the MLB labor market have been the focus of much research.

Ross (1984) developed one of the prevailing models for valuing a player. Ross' model held that if it can be assumed that attendance is a linear function of total revenue and that team success is a predictor of attendance, then it is possible to estimate a player's individual impact on revenues. Lackritz (1990) built on Ross' work by measuring the marginal impact of individual players' statistics, compared to those of an "average" player, on the revenue of their respective teams. More recently, the prevalence of "Moneyball" management, originated during the 2002 season by general manager Billy Beane of the Oakland Athletics, has revolutionized the way that many front offices analyze players. Recognizing the flawed player evaluations by many clubs and the financial limitations of his small-market club, Beane developed a strategy that focuses on using advanced baseball statistics, known as sabermetrics, to find undervalued young

players whose productive value would be far greater than the salaries the As would have to pay them (Lewis, 2003). Though opinions vary regarding the usefulness of models like these, the key implication is that a reasonable model is necessary for salary evaluation because if owners and players could agree on such a compensation model, then salaries would become substantially more efficient by being directly linked to productivity. Such a model would mitigate the debate and criticism of escalating contract sizes that do not always reflect the ultimate contribution of the player.

Despite the publicity and criticism of huge contract signings by players, Depken and Wilson (2004) investigated the MLB labor market and concluded that the seemingly inflated salaries in the MLB are not necessarily unjustified. They proposed that the marginal value of a worker's (player's) production can be measured by his marginal revenue product (MRP), a figure that represents the revenue a firm (franchise) can generate from that worker's (player's) marginal production. In theory, players should not have a salary greater than their expected MRP value because teams would not be willing to pay more for a player than the marginal revenue he will generate. On the other hand, players would not accept too low a salary if their MRP were substantially higher. Because of the tension between these two forces, Depken and Wilson concluded that salaries in professional baseball are largely "fair," and generally reflect the marginal impact of the revenues that players are expected to generate, which, in the case of professional athletes, is quite large.

Teams must be able to reasonably estimate the value of their most precious investments – players – in order to run an efficient and successful organization. Despite large strides in player analysis, the lack of a prevailing model to value players and the

likely inefficiency of contract negotiations led to teams achieving varying returns on their payrolls in my analysis, which can impact franchise value for better or worse. In addition, the bulk of related research was conducted before 2006 (the first year of data used in my analysis), since which time the popularity of large multi-year contracts has escalated sharply, increasing the complexity, size, and risk of payroll investment for many teams. Finally, regardless of whether salaries in the MLB are actually efficient, it remains unclear how the sharp growth in salaries has impacted the value of the league's franchises, both directly and indirectly.

The Impact of Payroll

Payroll is the most fundamental and critical investment that teams make. Another key consideration impacting franchises' financial performance, however, is not so easily measured: the ability of teams to *win*. Multiple studies have observed the relationships between payroll investment, winning percentage, and team revenue, but with varying conclusions. MacDonald and Reynolds (1994) showed that winning percentage was statistically significant in predicting the revenue of a team. Yilmaz and Chatterjee (2003) used attendance as a substitute for financial data because of its direct relationship to revenues and found a correlation between wins and attendance. Lewis (2008) also found a strong correlation (0.43) between winning percentage and attendance, and subsequently a stronger correlation (0.48) between salary investment and winning percentage.

Based on these findings, if investment in payroll increases a team's ability to win, and winning generates greater revenues for the franchise, then higher payrolls should ultimately generate higher franchise valuations. However, some research has contradicted this logic. Hayward and Patrick (2007) found only a weak correlation (0.23)

between team wins and revenues. They cited the fact that regardless of a team's on-field success, it may not produce solid financial results if, for example, it has a poor venue, operates in a small market, or if owners care more about winning than money.

Hawbaker, Kaiser, and Murray (2008) determined that little correlation exists between winning percentage and payroll, concluding that payroll investment alone is not sufficient to create and build a successful franchise. No professional consensus exists, however, regarding the relationship between winning and payroll, payroll and attendance, and, more generally, payroll and revenue (i.e. value). This void represents a focal point of my research: to determine the extent to which prevailing valuation models for MLB franchises account directly and indirectly for payroll investment, and whether payroll is actually predictive of value. The use of lag variables (e.g. payrolls and winning percentages from the *previous* year) were used in my analysis to help establish the existence or absence of a causal relationship.

Balancing the Score Line with the Bottom Line: A Dilemma for Owners

If increased investment in players augments teams' ability to win and generate greater revenues, then all franchises should ramp-up their payrolls by more aggressively pursuing top talent, in theory. In reality, though, franchise owners do not universally invest heavily in payrolls. For example, in 2013 the Houston Astros spent a measly \$25 million on their players, while the New York Yankees dished out over \$230 million. In fact, Alex Rodriguez, the Yankees' notorious third basemen and baseball's highest paid player at the time, made more than the *entire Astros squad* in 2013, with a salary of \$29 million (*The Associated Press*, 2013). Not surprisingly, the Astros finished with a league-worst fifty-one wins (out of 162 games). The Yankees, on the other hand, won

eighty-four. Clearly, the owners of these franchises do not have the same strategic intent, and the organizations have not achieved identical results. The differing incentives of teams' management have been the topic of much academic discussion.

Hayward and Patrick (2007) opined that higher payrolls do not necessarily result in better financial performance for many reasons, particularly if owners are more interested in winning than profits. Furthering the discussion of managerial incentives, Nelson and Dennis (2012) found a strong positive correlation between higher revenues and higher player salaries, and they showed that teams with greater salaries tend to have higher winning percentages. However, the relationship between gross profit margin and player salaries was determined to be negative. In essence, Nelson and Dennis concluded that investing in payroll does in fact help teams have higher winning percentages and revenues, but at the expense of their bottom line – presenting a significant tradeoff for owners. This study did not, however, consider other value-creating factors that may be generated by higher payroll investment, such as brand value and TV broadcast rights. It also produced only single-variable models and did not address causation versus correlation – two areas upon which my research expands.

In most businesses, success (and value) is synonymous with profits. Managers in companies with shareholders are expected to make strategic decisions and investments with the ultimate goal of building shareholder wealth by growing the value of their organization. Owners in the MLB, however, must weigh their ambitions for fielding a winning baseball team with the desire to run a more profitable franchise. Because the “shareholders” that own MLB franchise are typically wealthy individuals or teams of individuals, rather than the investing public, owners are essentially free to pursue

whatever goals they please, regardless of whether such efforts will actually increase the value of the franchise. This tradeoff is a material consideration in my analysis, because if not all managers have the same strategic incentives (i.e. profit-maximization), then comparing the financial performance of different franchises might be similar to comparing, say, Microsoft to United Way.

Competitive Balance in Major League Baseball

At the heart of all sports lies the concept of competition. As such, professional sports leagues strongly prefer parity among teams (Neal, 1964). In a perfectly-competitive environment, both teams would have an equal probability to win, and the outcomes of games would be completely unpredictable. In reality, however, this is not the case. Competitive success in professional sports is often concentrated among relatively few teams, a reality that has drawn substantial discussion about competitive balance in professional sports. Rottenberg (1956) originated the concern of competitive balance with his prediction that sports teams in larger markets would get all of the best players and would predictably win games, reducing competition and ultimately fans' interest in the sport. The dilemma that owners face in striving for either better on-field performance or higher profitability has enticed controversy regarding the lack of competitive balance in Major League Baseball. The perceived and actual disparity among teams in the MLB in terms of both winning and financial performance, especially compared to other sports leagues, has been studied heavily.

The Importance of Market Size

Literature has consistently concluded that teams in larger markets achieve greater financial and competitive success than their small-market competitors, resulting in

greater revenues and higher franchise valuations for those clubs. Lewis, Sexton, and Lock (2007) found that the size of a team's market is negatively correlated to the number of times the team has been "non-competitive," and that large market teams are more likely to overspend on player salaries – evidence of both on-field and financial advantages. Several critics have concluded that the marginal value of winning is substantially greater in larger markets (Scully, 1989; Burger and Walters, 2003; Solow & Krautmann, 2007). As Lewis (2008) rephrased, larger market teams are able to achieve much higher returns on payroll in terms of winning. Consequently, the demand for top-talent players is higher for these franchises, while smaller-market clubs are discouraged from making payroll investments, further decreasing their organic revenue- and win-generating potential. The findings of my research strongly support these conclusions.

Promoting Competitive Balance

Domestic professional sports leagues encourage competition among their franchises in two primary ways. The first is by instituting payroll limitations, such as a salary cap, which limits the permitted amount that teams may spend on player salaries, or luxury taxes, which impose fees on teams with high payrolls. Both mechanisms attempt to level the playing field between teams with varying levels of financial prowess. The second primary tool sports leagues use to promote competitive equality is instituting revenue sharing programs that divert a portion of revenues from large-market franchises to small-market franchises. Jap (2001) described payroll limitations and revenue sharing as attempts to both manage and allocate the rewards achieved by leagues as a whole.

Professional baseball in the U.S. does not enforce a hard salary cap, so the MLB has been particularly keen on stimulating competitive balance through revenue sharing.

Since the 1990s, collective bargaining agreements (CBAs) between owners and players have included revenue sharing provisions in the hopes of increasing the competitiveness of small-market teams by incentivizing investment in high-quality players, which in turn would increase these teams' capacity to win and build sustainable revenue bases. League revenues are allocated in proportion to how a team's local revenues compare to the league average. Using data provided by Bloomberg, the table below illustrates the distribution of franchise revenues and revenue sharing payments from 2013:

2013 Revenue Sharing Distribution (in millions of dollars)

Team	Team Revenue	Net gain/(loss) from revenue sharing
New York Yankees	\$ 570	\$ (97)
Boston Red Sox	405	(56)
Chicago Cubs	320	(39)
Los Angeles Dodgers	325	(32)
Philadelphia Phillies	315	(29)
Los Angeles Angels of Anaheim	275	(28)
New York Mets	265	(27)
San Francisco Giants	300	(21)
Texas Rangers	260	(15)
Chicago White Sox	225	(8)
St Louis Cardinals	250	(6)
Detroit Tigers	245	(1)
Seattle Mariners	225	(1)
Atlanta Braves	225	-
Minnesota Twins	215	6
Houston Astros	205	9
Washington Nationals	230	11
Colorado Rockies	195	13
Toronto Blue Jays	210	15
Milwaukee Brewers	205	19
Baltimore Orioles	210	20
San Diego Padres	195	20
Cincinnati Reds	205	22
Arizona Diamondbacks	195	27
Tampa Bay Rays	175	29
Cleveland Indians	190	30

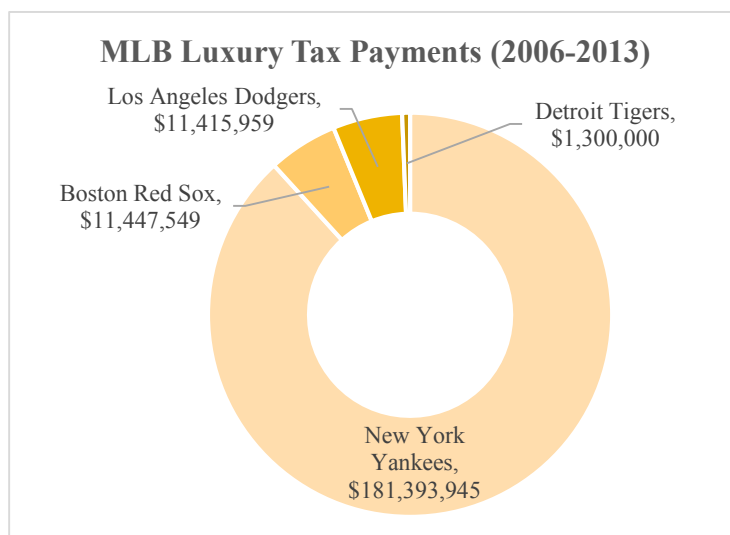
Miami Marlins	200	32
Pittsburgh Pirates	185	35
Kansas City Royals	180	36
Oakland Athletics	175	36

Though this method of redistributing league wealth is logical in theory, literature has overwhelmingly criticized the MLB's revenue sharing program as a means to promote competitive balance. Burger and Walters (2003) denounced MLB's revenue sharing program, claiming that simply redistributing funds may decrease player salaries, but it does not fundamentally improve competitive balance. Subsequent research has largely reached similar conclusions (Solow and Krautmann, 2007; Lewis, 2008; Wenz, 2013). Solow and Krautmann (2007) claimed that revenue redistribution will foster competitive balance only if it has a greater impact on the marginal revenue of large market teams than small market teams, but they found that the redistribution program in place has had no discernable impact on competitive balance in the league. The MLB commissioned an independent report by the Blue Ribbon Panel on Baseball Economics in July of 2000 to study the increasing cost of remaining competitive in many MLB markets. The panel found that some low-revenue franchises determined that revenue sharing payments were insufficient to help the team become competitive, so these teams instead used the payments to achieve some level of profitability. Research by Lewis (2008) is consistent with these findings. Lewis concluded that revenue sharing in the MLB may actually *dis*-incentivize investment in payroll by small-market clubs. Instead of improving the quality and competitiveness of their teams, some small-market owners have opted to increase financial performance by decreasing payrolls – reducing winning percentage and local revenues – in order to simultaneously lower costs and increase

revenue sharing payments. As a result, competitiveness in the league as a whole is reduced, and competitive disparity, both on-field and financial, is enhanced.

Perhaps in response to the lack of success and criticism of MLB's revenue sharing program, owners and players agreed in 2003 to institute a competitive balance tax on teams with "excessive" payrolls. If a club's payroll exceeds an established threshold (e.g.

\$189 million in 2014; see Appendix B for historical luxury tax thresholds), then they become subject to the luxury tax on the payroll in excess of the threshold at increasing rates that reach up to 50%, depending on how



long the excessive payrolls remain in place (Wenz, 2013). Again, while this payroll tax theoretically makes sense, its ability to have a material impact on competitive balance is limited because the threshold amounts are far too great for the majority of teams to obtain. According to data from stevetheump.com, since 2006, only four teams have actually exceeded the payroll thresholds, and only two have exceeded it more than once, with the Yankees having done so every year the tax has been in place. MLB's luxury tax will likely continue to have only a minimal impact on competitive balance in the league as long as financial resources are concentrated among so few teams.

The Structure of the MLB Season

Moskowitz and Wertheim (2011) also studied competitive balance in sports in their book, *Scorecasting*. They noted that while fans prefer competition, the MLB is noticeably less “competitive” than other sports. Moskowitz and Wertheim ascribed the lack of parity in the MLB to the fundamental structure of the sport. First, professional baseball teams play 162 games per year (twice that of any other sports league), which limits the opportunity for unpredictable outcomes by the end of a season. In other words, the best teams will usually finish with the best records. Second, the playoff structure favors the best teams; eight of the thirty teams in the league (26.7%) make the playoffs – compared to 37.5% of teams in the NFL and 50.0% in the NHL and NBA. In addition, each of the three primary playoff rounds is a “best-of” series, again favoring the more talented team and reducing the chance for unexpected results.

Not all academics see competitive imbalance as a problem that can or should be mitigated. Sanderson (2002) criticized that the debates over competitive imbalance and proposed solutions deny that imbalance is an inherent, inevitable part of all competition. However, existing research in general criticizes the relative lack of competitive balance in Major League Baseball. The fundamental structure of both the baseball season and the revenue sharing system in place enhance economic and competitive disparity between teams. These realities increase the complexity of conducting meaningful analysis about franchise valuations because they distort the financial figures of some teams and enhance the differing incentives of club owners. In my analysis, the historical advantages of certain franchises and the differing incentives of owners prove to be likely explanations behind the results of my research.

How to Value Professional Sports Franchises

According to data from bizofbaseball.com, George Steinbrenner and a group of investors purchased the Yankees in 1973 for a reported \$27 million. In March 2014, *Forbes* valued the Yankees at an astounding \$2.5 billion – implying a 12.0% annual rate of return for the Steinbrenner family. Such exceptional value growth handily outpaced the S&P 500 Index, which earned a 6.93% annual return over that time, excluding dividend reinvestment. Sales of MLB franchises typically involve a handful of savvy investors and the exchange of millions of dollars, but how do these parties place a value on these franchises? In order to assess the influence of player salaries on franchise valuation, it is necessary to understand how some experts propose to actually value sports clubs. Lee and Chun (2002) provided a thorough overview of the factors that drive economic value in professional sports franchises in *The Sports Journal*. Lee and Chun noted that sports franchises must be valued based on their revenues, which differs significantly from how we value traditional businesses (i.e. based on cash flow and assets). This difference exists, they argue, because (1) in the long-run, the operating expenses for each team within a professional sports league are roughly equivalent, and (2) because revenues most accurately indicate the quality of a team's venue and its athletes – the two most fundamental elements of a team's evaluation.

According to a published interview conducted by Ochoa (2013) in *Business Insider*, valuing professional sports does not depend on the valuation of tangible or intangible assets, but rather on observing a team's potential to *win*. Winning generates interest in a particular club, which in turn drives sales of tickets, concessions, memorabilia, etc. Ochoa's interviewee, a sports investment banker, cited that the most

important items to look at when valuing a sports franchise are the strength of the team's brand, the audience's reception of the team (which drives sales and sponsorships), the team's ability to obtain and retain star players, the sale of broadcasting rights and licensing, and other external factors that include the fundamental popularity of the sport. I believe that these conclusions somewhat contradict one another, as the critical items to franchise valuation he mentioned do not all necessarily depend on winning. Take, for example, the Dallas Cowboys in the NFL. Though the Cowboys have historically been a strong team, having won five Super Bowls, they have not fielded a truly competitive team for nearly two decades. Nonetheless, the Cowboys generate substantially more revenue than other NFL teams, and in 2013 *Forbes* valued the franchise at \$2.3 billion – higher than any other team in the league (Ozanian, 2013). My results support the notion that simply fielding a winning ball club is not necessarily the most important influence on the value of the franchise.

Valuing franchises based on their revenues is consistent with *Forbes'* widely accepted methodology. *Forbes* publishes popular financial data and valuation rankings of professional sports franchises each year. Its MLB valuation articles, entitled “Business of Baseball,” provide a valuation metric for every team in addition to listing their estimated revenues, operating income, debt levels, and year-over-year change in team value. These valuations have a very strong correlation with team revenues because *Forbes* uses multiples of revenue to estimate franchise value. Valuation of a professional sports franchise by multiples is more complex than multiple analysis of a publicly traded firm. Just as price-to-earnings (P/E) multiples become “not meaningful” when a company's earnings are negative, it is also difficult to compare multiples of many sports

teams and leagues, for which it is not uncommon to have negative earnings and/or cash flow in a particular year (Ochoa, 2013). My analysis was conducted under the assumption that franchises should indeed be valued based on their revenues, though my findings also suggest a number of limitations to such analysis.

Forbes' 2014 publication (reflecting data through the 2013 year) valued the average baseball team at \$811 million, representing a 9.0% increase over the previous year. Though operating income actually fell 26.3% in the same year (the second consecutive decrease of more than 20.0%), *Forbes* asserted that values increased so greatly because it is necessary to assess the value of the league's entire portfolio of assets rather than just each teams' individual revenues. Consequently, valuations grew due to higher television broadcast rights fees (which are distributed evenly among teams), the increasing success of Major League Baseball Advanced Media ("MLBAM"), and growth in the league's investment fund (Ozanian, 2014).

A few months after last year's 2013 "Business of Baseball" release, Bloomberg published an interesting article that provided valuations of MLB teams that were 35% higher than those given by *Forbes*. The reason, they claimed, was due to the aforementioned \$2.15 billion sale of the Los Angeles Dodgers franchise, which they believe demonstrated the necessity to value *all* the assets of a team, not simply revenues from ticket sales, concessions, etc. In particular, the main driver of the higher valuations was the value of teams' Regional Sports Networks ("RSNs"). As defined by Dixon (2013), RSNs are television networks that possess the rights to broadcast sports teams' games in a particular market, a service for which viewers typically pay a monthly fee. Dixon argued that the record-breaking Dodgers' sale was substantially more valuable

than previous deals primarily *because* of television, which he claims “has never, ever been bigger.” The deal to which he was referring is worth an estimated \$8.35 billion over twenty-five years and will create a team-owned RSN, entitled “SportsNet LA.” The robust values of such networks, comes from the fact that while the MLB usually collects about one-third of broadcast revenues of teams to include in its revenue-sharing program, teams invested in their own regional networks typically maintain almost all of the profits of the RSN (Dixon, 2013). Because of local media broadcast revenues, Sommers (1990) asserted that owners of franchises in large markets should naturally be willing to pay their players more than smaller market clubs. This propensity manifests itself clearly in my analysis, as larger market teams as a whole will have higher revenues and payrolls, further enhancing the league’s competitive imbalance.

Bloomberg provided additional information in its analysis by breaking down total franchise value into team value (71.9% of total value), RSNs (15.6%), related businesses (1.6%), and MLBAM (10.9%). They also dissected revenue into gate receipts, concessions, sponsorships, media rights, parking, and net gain or loss from revenue sharing (See Appendix B). This additional data was used in conjunction with that provided by *Forbes* to conduct a more thorough financial analysis of the MLB franchises.

METHODS & RESULTS

Before I get into the data and the conclusions of my research, I will pose a hypothetical to illustrate my analytical intentions. You are a wealthy investor looking to purchase a MLB team because you are a lifetime baseball fan, and you want to fulfill your dream of owning a World Series Champion baseball franchise. I am a current team owner looking to sell, and I come to you and pitch you my club. I tell you that:

1. Since 2006, my team has averaged 87 wins per season (53.8%), has made the postseason three times, and has even taken a trip to the World Series.
2. This franchise is strategically located in a large U.S. market.
3. My team has achieved promising financial results, as our top line has at a rate of 8.7% since 2006 and peaked this past year at \$262 million, nearly 11% higher than the league average.
4. As a fellow baseball fan and a soon-to-be-retiree, I offer to sell you my team at a bargain price, equivalent to a multiple of 2.7 times revenue. I tell you that this is a steal, because prominent MLB franchise valuation models valued clubs at an average revenue multiple of 3.3 this past year. All you have to do is sign the dotted line right here, right now, and this incredible franchise is yours.

Given your incentives and the information I provided you, this opportunity may pique your interest. It looks like I am offering you a winning club with strong financial prospects at a reasonable price. You buy the team and are ecstatic, thinking you got a great team at a huge discount.

Unfortunately, when you then take a deeper look at the team's books, you realize that your deal may not be as sweet as you originally thought. In fact, you notice that your team has consistently been one of the least profitable in the league: you recently had an operating loss for four straight years, and you barely scraped a profit this past year. You are still not discouraged, however, because past performance is not necessarily indicative of future results, so perhaps you have the opportunity to turn around the franchise. You analyze the financials even further. Unfortunately, you find that this club pays out an enormous amount of money in player contracts, especially relative to its revenues.

What's more, you realize that not only have you *historically* been paying out way too much in salaries, but this trend is not going anywhere soon: you currently have a massive liability in outstanding player contracts, nearly double the league average. How excited are you about owning a baseball team now?

This hypothetical is obviously fabricated and unlikely; the proposed team, however, is not. This team is the Detroit Tigers. Despite being a successful team on the field and exciting fans with stars such as former MVPs Miguel Cabrera and Justin Verlander, the Detroit Tigers are perhaps the worst performing franchise in the league financially. The Tigers were in

	<i>in 2012 dollars</i>	Average from 2006-2013	
		<i>Detroit Tigers</i>	<i>MLB</i>
the red for four consecutive years	Revenue	\$203,391,903	\$196,220,833
from 2009 through 2012 to the	Payroll expense	\$123,269,867	\$90,866,494
tune of an \$85.3 million total	Payroll as % of revenue	60.91%	46.53%
operating loss. They have been	Total contracts value	\$311,104,697	\$166,103,097
in the bottom five in operating	Operating margin	-4.01%	7.71%
	Wins	87.24	81.00
	Payroll cost of win	\$1,432,604	\$1,125,415

income every year since 2006, posting an average operating margin of negative 4%.

Disguised behind the Tigers' winning history is the fact that the club's payroll cost per win on average has been \$1.4 million, which is a hefty 27% higher than the league average of \$1.1 million. The Tigers have dished out a staggering 61% of revenue as player salaries on average over the last seven seasons (the league average is just 46.5%), and has achieved the highest such figure three out of the last five years. Further, Detroit is currently sitting on over \$668 million worth of player contracts (more than double the league average of \$357 million), and these contracts have an average life of 2.35 years (compared to league average of 1.84). With razor-thin or negative margins and a massive

payroll liability, the Tigers beg the question not simply “Is this franchise overvalued at 2.70 times revenue?”, but also “*Would anyone even want to buy this franchise?*”

Analysis such as that in the above example is one of the primary efforts of my research. While experts generally agree that revenues are the primary driver of franchise value, revenue alone can be extremely misleading if not analyzed in conjunction with other factors. As both the largest investment and largest expense of almost every team, payroll should be the most critical factor in valuing a baseball franchise. The goal of my research is to determine how MLB teams’ monetary investment in players actually impacts this value, and how prevailing models like *Forbes*’ account for payroll investment. Through analysis of historical financial and non-financial data, I will make a conclusion about whether the increasing salaries of professional baseball players have directly increased the value of MLB franchises, or whether franchises have generated value from some other source that has simply allowed them to increase their payroll budgets. In order to answer these questions, I gathered several types of data for the period of 2006 to 2013 from a number of sources. I selected this time period because I found it to be a good balance between data set size and time relevance, and during this period contract values and franchise values in the MLB appreciated drastically.

Financial Data

To assess the underpinnings of baseball as a business, I gathered financial data for every team and the league as a whole. My primary source was *Forbes*, whose annual “Business of Baseball” articles provided several critical pieces of information for each MLB team: revenue, debt level (as a percentage of current value), operating income, and an estimate of each team’s current value for every year from 2006 to 2013. In addition, I

used published team salary data from *USA Today*. Using their figures, which list the current salaries, contract values, and contract years of all players in the league, I determined the following amounts for each team that were used in my analysis:

- Number of players with contracts,
- Total annual salaries,
- Average player salary,
- Median player salary,
- Standard deviation of salaries,
- Average years of contract length,
- Total value of contracts, and
- Average contract value.

I also collected data from Bloomberg's 2013 valuations of the MLB franchises. This data included: a total value estimate, broken down into team value, regional sports network, related businesses, and MLB Advanced Media; and team revenue, broken down into gate receipts, concessions, sponsorship, media rights, parking, and net gain or loss from revenue sharing. Using data from stevetheump.com, I obtained team luxury tax payments history since 2006 to determine which teams have historically exceeded the competitive balance payroll threshold. Finally, I retrieved Consumer Price Index history data from the Seattle Finance Department, which allowed me to adjust for inflation and view past financial information in 2012 dollars, where applicable.

Due to the broad acceptance of *Forbes'* valuation model and its consistency with other research (Lee & Chun, 2002; Ochoa, 2013) that sports teams should be valued based on their revenue, I used *Forbes'* data and analyzed its model to help determine the

relationship (or lack thereof) between player's salaries and franchise values. Using *Forbes'* financial figures, I will also explore the financials of MLB's franchises to seek out some of the more obscure trends and realities of the business of baseball.

Other Data

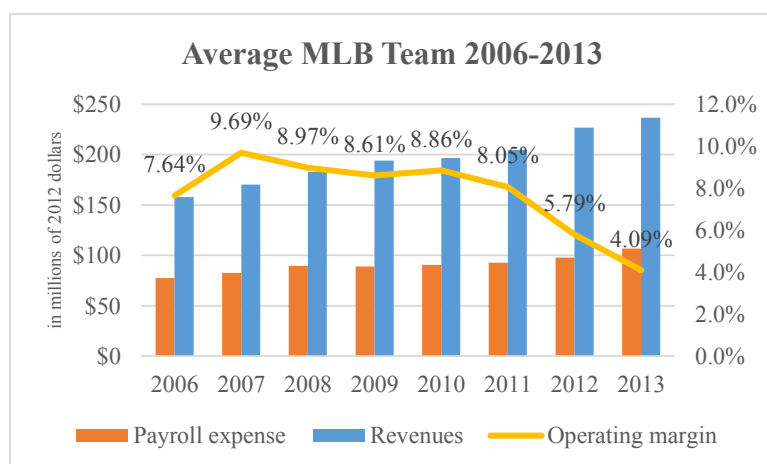
To further analyze the relationship between payroll and value creation in MLB franchises, I collected several other non-financial data sets. I assembled team win and loss data from 2006 to 2013 from baseball-reference.com, which assisted in the analysis of the relationships between teams' ability to win and their financial performance. To assess the impact of market size in my analysis, I obtained population estimates for each city in which an MLB franchise is located, as well as the estimated populations of the applicable major metropolitan areas, using data from the U.S. Census Bureau. I also obtained historical attendance data from espn.com in order to observe the previously-researched relationship between attendance and revenues and to analyze the impact that past attendance may have on current payrolls, or past payrolls may have on current attendance. ESPN's data included: number of home games, home total attendance, home average attendance, home attendance percentage, number of away games, away average attendance, away attendance percentage, total games, total average attendance, and total attendance percentage. I researched the stadiums of each individual franchise to determine its age and capacity, which were used to assess the impact that new or better stadiums may have on revenues. Finally, I created a proxy variable for a team's tradition by determining the "age" of its franchise based on how long it has been in its current market.

Observations

After assembling *Forbes'* MLB financial data, team performance history, market size estimates, attendance numbers, stadium information, and inflation figures, I compiled the mass of information into a single data set that reflected the time horizon from 2006 through 2013. From this model I made many general observations of the data that helped me develop my research questions and test hypotheses. In the following subsections I will delve into what I found to be some of the most interesting trends and relationships I found in the data. I will begin with Major League Baseball as a whole.

The Average MLB Franchise

When Bud Selig took over the job as commissioner of the MLB in 1992, he informed franchise owners that he wanted his reign to be judged by how team values



increased (Ozanian, 2014). The Economic History of Major League Baseball listed the average team to be worth \$110 million at that time, and *Forbes'* most recent calculations showed the average franchise to be worth about \$811 million – a commendable 10.0% compound annual growth rate (“CAGR”) during Selig’s tenure. This immense growth represents the increase in baseball’s popularity and the league’s ability to sell the sport through a number of different avenues.

Since teams began aggressively signing players to multi-year contracts in 2006, revenues in the MLB have grown at a CAGR of just under 6.0%. Meanwhile, team payrolls have grown at 4.7% per year. Though the increase in payroll has not matched that of team revenues, what payroll growth does not reveal is that the total value of the average team's outstanding salary contracts has grown at a much higher rate – 24.1% per year – and the average total contract liability is now over \$351 million per team. Given these trends, I began to ask a number of questions: What has fueled this growth? Have franchises seen an increase in revenues because of their large investments in players? Or are these organizations simply growing their business through other sources, and paying their players more as a result? If contracts continue to grow at such a high rate, will league profitability be further squeezed? By looking into the data of specific teams, possible answers to these questions began to manifest themselves. I will introduce my test hypotheses by contrasting two starkly different teams – the New York Yankees and the Tampa Bay Rays. Many have described baseball as a business of “haves” and “have-nots,” so it seems only appropriate to approach my analysis similarly.

“Have”

As previous research has established, teams in large markets have a significant material economic advantage over their smaller-market counterparts. The valuations of MLB franchises offered by *Forbes* seem to concur with these conclusions. In 2013, the four teams to which *Forbes* assigned the highest valuations (the New York Yankees, Los Angeles Dodgers, Boston Red Sox, and Chicago Cubs), were, not coincidentally, located in the 1st, 2nd, 10th, and 3rd largest Metropolitan Statistical Areas (“MSAs”) in the United States, respectively. In addition, the payrolls of these teams ranked 1st, 2nd, 4th, and 13th,

respectively. The most obvious “have” is the New York Yankees, who provide a glaring example of the competitive disequilibrium in the MLB.

The New York Yankees are perhaps the most polarizing franchise in professional sports. They operate in the largest domestic market, are notorious for having obnoxious and condescending fans, and habitually out-bid the rest of the league in obtaining the best (and most expensive) players. In every year of my analysis time frame, the Yankees had the highest payroll, highest revenue, and highest valuation by *Forbes*. Fans of other baseball teams would not have such disdain for the Yankees, though, if they did not *win*. Since 2006, the Yankees have averaged an incredible 94.1 wins per season (58.1% win percentage), and they made the playoffs in six out of the eight years, even winning the World Series in 2009. In over a century of MLB competition, the Yankees have won nearly one-fourth of all World Series championships (27) – more than twice as many as any other team. Eight organizations have never won a World Series, and nine others have won fewer than three (Moskowitz and Wertheim, 2011).

What drives this monopolistic success? What do the Yankees do that other teams have been unable to duplicate? The answers to these questions may lie in the numbers. The Yankees consistently spend an exorbitant amount on their players. In the last eight years, the Yankees’ payroll has averaged \$215 million (in 2012 dollars). The average payroll in the league last year was \$104 million – less than half of the Yankees *typical* expenditure. Not surprisingly, the Yankees’ payroll has exceeded the luxury tax threshold every year the tax has been in place. How, you may ask, does the franchise pay such obscene salaries and still remain profitable? Answer: they don’t. Nelson and Dennis (2012) made the claim that an inverse relationship exists between payroll

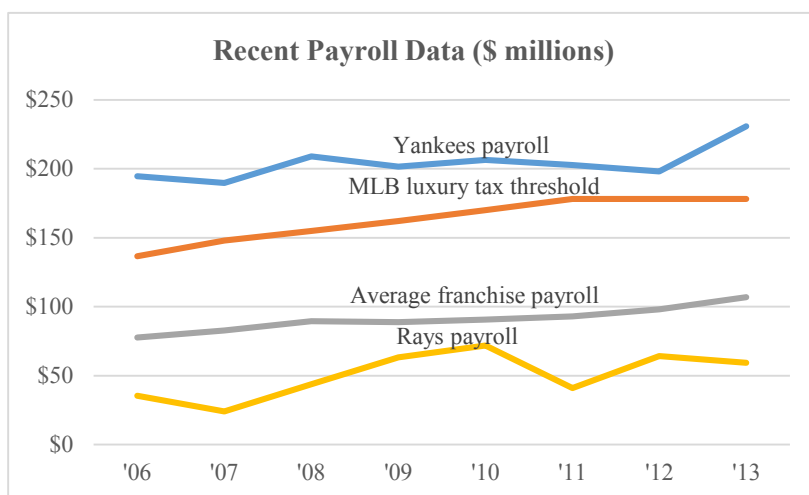
investment (and winning) and profitability – a trade-off that becomes quite clear with the Yankees. Though they gross nearly double the average franchise’s revenues, the Yankees have been in the red for five of the last eight years, resulting in a total operating *loss* of \$83.3 million. Moreover, the franchise’s payroll turnover (revenue divided by payroll) and return on payroll (operating income divided by payroll) are consistently among the worst in the league – both of which suggest remarkable inefficiency in player investment. It is quite evident that the Yankees’ ownership (the Steinbrenner family), has foregone the opportunity to run a profitable organization for the desire to field an exciting and winning baseball team. This ambition has required consistently exorbitant investment in top-tier players – an investment to which Yankees fans have become accustomed. It appears in this case that it does not matter whether or not the Yankees *actually* win; what matters is whether fans *perceive* that the Yankees have spent enough to field a winning team, and the Steinbrenners are not willing to risk otherwise. Perhaps understanding the findings of Burger and Walters (2003) that market size and expected team performance increases the marginal value of extra wins, the Yankees are clearly reluctant to allow any material decrease in their payroll. Though the Yankees are certainly the most extreme example, many other teams have adopted similar aggressive payroll strategies, such as the Dodgers, Angels, and Tigers.

“Have-Not”

While *Forbes* recently gave the Yankees the highest valuation in the league for the seventeenth consecutive year, the Tampa Bay Rays have received one of the five lowest valuations every year since 2006, and have received *the* lowest for the last two years. By most considerations, the Yankees and Rays could not be more different. The

Rays' home in Tampa, Florida represents one of the smallest markets in the league. Adjusting for inflation, the team on average has grossed just \$160 million in revenues and paid out only \$53 million in payroll (versus league average of \$196 and \$91 million, respectively). Moreover, the Rays are sitting on only \$91.6 million in total contracts value, the duration of which averages just 1.40 years (league average of \$351 million and 1.84 years, respectively).

Behind these seemingly dismal numbers, however, lie some unexpected facts about the franchise. First, the Rays have consistently been one of



the most profitable teams in the league. Their average operating margin of 12.6% is abnormally high, and their average return on payroll is an incredible 41.9% – more than 2.5 times the league average of 16.5%. In addition, the Rays' operations have been highly efficient. The franchise's payroll cost per win and payroll turnover consistently rank among the best in the MLB. Perhaps most impressive, however, is that the Rays achieved this financial success without sacrificing the team's on-field performance. The Rays have made the playoffs three of the last six years, averaging 91.4 wins per season (56.4%) over that time. Have the Rays, like the Oakland As (founders of the "Moneyball" strategy) learned how to have their cake and eat it too?

As with the		New York	Tampa Bay
		Yankees	Rays
Yankees, the Rays'	Revenue	\$461	\$181
financial performance	Avg. home attendance %	80.50%	54.70%
	Payroll	\$230.8	\$59.4
speaks volumes about the	Total contracts value	\$874.5	\$91.6
	Avg. contract length	2.04 years	1.40 years
club's management.	Operating margin	-1.97%	8.45%
	Return on payroll	-3.94%	25.76%
Lewis (2008) conjectured	Wins	84	91
	Payroll cost of win	\$2,732,514	\$649,610
that some smaller-market	<i>Forbes</i> revenue multiple	5.32x	2.63x
	<i>Forbes</i> value rank (of 30)	1st	30th
franchises have			

deliberately imploded the quality of their team (reducing payroll), deciding instead to use revenue sharing payments to become profitable. The Rays, however, have been able to operate at minimal payroll cost without sacrificing the team's capacity to win, and while still netting some of the largest revenue sharing payments (\$29 million in 2013, according to Bloomberg). The Rays' owner, Stuart Sternberg, clearly does not share the Steinbrenners' win-at-all-cost strategy of excess and economic overpowering. Instead, Sternberg has focused on running a lean, efficient operation that emphasizes developing the players in its farm league, rather than acquiring high-ticket free agents, and signing players to smaller, shorter-term contracts, which are "safer" and more efficient by more closely linking compensation to productivity.

Though this contrast could not be more extreme – as the Yankees and Rays are the highest and lowest valued teams, respectively, according to *Forbes* – the differences between the two manifest themselves in the several hypotheses that I will test through regression analyses in the following section:

1. Larger market teams earn greater revenues, spend more on payroll, and receive higher valuations from *Forbes*.
2. Payroll investment will be correlated with and predictive of franchise revenues. Similarly, I believe payroll investment from the *previous* year will be predictive of *current* year revenues, as fans have built an expectation of team performance, and teams with greater payrolls will have higher revenues in general. Similarly, payroll investment in the previous year may be equally or more predictive of current year attendance as current year payroll.
3. Payroll investment will inversely correlate with operating margins, confirming previous research, and teams will achieve diminishing returns on payroll investment both in terms of operating income and revenues.
4. Though higher payroll and higher winning percentages may correlate, payroll will not be an exhaustive predictor of team success on the field. In smaller markets where the marginal value of winning is lower, some franchises are able to organically-develop competitive teams and avoid the expectation of large-market teams to invest in pricey free agent acquisitions.

Model

Because previous research has indicated that sports franchises should be valued based on their revenues, I used the collected data to build a model meant to predict revenue, which essentially equates to value. Using this data, which reflects all thirty teams from 2006 to 2013, I built a correlation table that helped me to formulate the model used to determine the impact that payroll has on franchise value.

	Forbes					Total							
	Value	Revenue	Payroll	Operating Margin	Win %	Contracts Value	Avg. Home Attendance	Total Avg. Attendance	Age of Stadium	Market Size	Age of Franchise	Prev. Yr. Payroll	Prev. Yr. Win %
Forbes Value	1												
Revenue	0.922	1											
Payroll	0.760	0.849	1										
Operating Margin	-0.359	-0.328	-0.490	1									
Win %	0.249	0.321	0.365	-0.179	1								
Total Contracts Value	0.722	0.706	0.741	-0.466	0.248	1							
Avg. Home Attendance	0.562	0.667	0.764	-0.305	0.452	0.529	1						
Total Avg. Attendance	0.576	0.665	0.736	-0.261	0.437	0.493	0.976	1					
Age of Stadium	0.350	0.322	0.353	-0.079	0.128	0.153	0.240	0.270	1				
Market Size	0.674	0.675	0.613	-0.249	0.182	0.445	0.504	0.501	0.275	1			
Age of Franchise	0.272	0.341	0.410	-0.160	0.142	0.333	0.302	0.310	0.192	0.082	1		
Prev. Yr. Payroll	0.724	0.849	0.872	-0.500	0.278	0.630	0.684	0.658	0.342	0.647	0.410	1	
Prev. Yr. Win %	0.317	0.412	0.530	-0.214	0.493	0.332	0.553	0.530	0.117	0.281	0.139	0.391	1

From the above correlation matrix, *Forbes'* use of revenue to value clubs was evident in the high correlation the two share (0.922). As expected, market size appeared to have a significant role in the business of baseball, with its strong correlations to the three primary financial metrics used: payroll (0.613), revenue (0.675), and value (0.674). In addition, payroll looked to be a very strong variable, sharing high correlations with revenue (0.849) as well as home and total attendance (0.764, 0.736). Interestingly, winning percentage appeared to be only weakly correlated with revenue (0.321) and payroll (0.365), despite sharing slightly stronger correlations with home and total attendance (0.452, 0.437). I reasoned that this discrepancy perhaps indicated that payroll investment may not be highly predictive of winning, and that while a team's ability to win may put fans in seats, winning may not in itself drive revenues, so it may be that payroll investment drives revenues more through other sources (e.g. television, memorabilia sales, etc.). While stadium age did not appear to hold much importance, a team's tradition, as measured by franchise age, correlated relatively strongly with payroll (0.410). Operating margin correlated negatively with every single other variable included in the matrix, consistent with previous research that payroll investment and the pursuit of winning reduce profitability substantially. Lastly, I found it curious that

payroll and winning percentage from the *previous year* correlated just as highly or higher with revenue as the *current year's* payroll and winning percentage.

Using the observations gathered from this table, I ran a number of regressions using Stata Data Analysis and Statistical Software. From these tests I was able to establish several relationships that helped me construct a simple model to predict revenue. I ultimately selected five primary independent variables:

- **Payroll:** As expected, payroll correlated highly with revenue. This variable is the primary one of concern. Other variables were included for comparative and informative purposes to determine the relative strength of payroll's ability to predict the value of a franchise. In addition, because of the strong correlations demonstrated by **Previous Year Payroll**, this variable was included additionally as a substitute for payroll itself.
- **Market size:** Market size has been studied extensively because of the effect that it has on enhancing the economic disparity and competitive imbalance between large- and small-market teams in the MLB. As measured by the populations of the Metropolitan Statistical Areas corresponding to MLB franchise locations, market size will be a critical variable throughout my analysis.
- **Winning percentage:** Though the correlation between winning percentage and a team's revenues were not particularly strong, several experts have found winning percentage to be important to a team's financial success, so I elected to include it in the model. In addition, because of the stronger correlations between **Last Year's Winning Percentage** with both attendance and payroll, this variable was

also included as a substitute for winning percentage to help assess which, if either, helps drive revenue growth.

- **Average home attendance:** Attendance figures largely reflect the revenue-generating capacity of a team's performance in bringing fans to its games. I ran single-variable regressions of revenue versus either home attendance or total attendance (home and away), and home attendance by itself was the better predictor. This is likely because the MLB shares gate receipts among the two teams playing, with 80% going to the home team and 20% to the away team. As such, it was included in the model as well.
- **Tradition (Franchise Age):** Because the teams with the longest histories (e.g. Yankees, Red Sox, Phillies) have been among the most successful in terms of both on-field performance and financial strength, I expected that the ages of each franchise would positively impact revenues. Single-variable regressions supported this conjecture. I took the natural logarithm of the franchise age variable so that the data would be closer to a normal distribution.

Results

Using revenue as the dependent variable and the five figures listed above as the independent variables, I ran three types of regressions on the panel data: Ordinary Least Squares (OLS), Fixed Effects (FE), and Random Effects (RE). While OLS is the traditional regression methodology, it assumes that there is no multicollinearity among the variables, which is not the case with my dataset because the same thirty teams comprise the eight years of data that I collected. This causes OLS to be less informative because teams do not behave randomly each year (i.e. the 2012 Rangers did not operate

completely independently of the 2011 Rangers). Consequently, I also ran fixed effect regressions (FE), which account for the facts that there were multiple years of data and that the same teams were included each year. I also performed random effects (RE) tests, which are very similar to FE tests, but ignore the “team effect” (i.e. the 2012 Rangers *do* operate independently of the 2011 Rangers). The results of the FE tests are those of focus, as they most accurately portray the relationships between the variables included by treating the data as a panel data set. Listed below are the results of all three tests for three different models: one using the five basic variables, one substituting **previous year payroll** for **current year payroll**, and one substituting both **previous year payroll** and **previous year winning percentage** for the current year figures.

Model 1:

<i>Indep. Variables</i>	Ordinary Least-Squares (OLS)		Fixed Effects (FE)		Random Effects (RE)	
	<i>Coeff.</i>	<i>P-value</i>	<i>Coeff.</i>	<i>P-value</i>	<i>Coeff.</i>	<i>P-value</i>
Payroll	0.9721	0.000	0.5219	0.000	0.7352	0.000
Market Size	2.6342	0.000	67.6817	0.000	4.7569	0.000
Win%	4959731	0.866	8917711	0.690	15400000	0.550
Avg. Home Attendance	-104.30	0.762	226.30	0.601	-872.34	0.033
Age of Franchise	752437	0.756	16400000	0.168	12300000	0.005
_cons	95500000	0.000	-313000000	0.000	79600000	0.000
R-squared:	0.7503		0.4944		0.7062	

Model 2:

<i>Indep. Variables</i>	Ordinary Least-Squares (OLS)		Fixed Effects (FE)		Random Effects (RE)	
	<i>Coeff.</i>	<i>P-value</i>	<i>Coeff.</i>	<i>P-value</i>	<i>Coeff.</i>	<i>P-value</i>
Prev. Year Payroll	0.8940	0.000	0.3884	0.000	0.5416	0.000
Market Size	2.3811	0.000	68.6070	0.000	4.5772	0.000
Win%	49100000	0.111	2930184	0.900	24800000	0.357
Avg. Home Attendance	694.51	0.036	1493.39	0.000	570.73	0.128
Age of Franchise	-100070	0.970	29300000	0.065	12500000	0.013
_cons	65800000	0.000	-390000000	0.000	52900000	0.015
R-squared:	0.761		0.5179		0.7203	

Model 3:

<i>Indep. Variables</i>	Ordinary Least-Squares (OLS)		Fixed Effects (FE)		Random Effects (RE)	
	<i>Coeff.</i>	<i>P-value</i>	<i>Coeff.</i>	<i>P-value</i>	<i>Coeff.</i>	<i>P-value</i>
Prev. Year Payroll	0.8881	0.000	0.3971	0.000	0.5417	0.000
Market Size	2.3559	0.000	68.1590	0.000	4.6104	0.000
Prev. Year Win%	41400000	0.222	36600000	0.159	59000000	0.046
Avg. Home Attendance	715.71	0.036	1242.28	0.002	338.68	0.384
Age of Franchise	-3865	0.999	26900000	0.086	12600000	0.012
_cons	69200000	0.000	-388000000	0.000	42600000	0.049
R-squared:	0.7598		0.5165		0.7188	

The above results support my hypothesis that payroll investment is a critical driver of revenue, and they confirm previous research that has established the importance of market size on franchise revenues. Market size demonstrated a consistently positive coefficient with revenue, and its p-value of 0.000 in every single test indicates a high level of statistical significance (i.e. that the impact of market size on revenue is not coincidental). In addition, payroll appears to be highly predictive of revenues, generating a positive (but less than one) coefficient with revenues in each scenario. Furthermore, payroll from the *previous year* turned out to be predictive of revenues as well, generating similar but smaller coefficients in each regression type. The results of both payroll and previous year payroll were highly statistically significant, generating a p-value of 0.000 in all three tests of all three models.

The impact of the other three variables of my model – win percentage, average home attendance, and franchise age – contributed mixed results. Win percentage was consistently positively related to revenue, but was not statistically significant in predicting revenue in any scenario. As it turned out, *last year's* win percentage proved to be a much better predictor of home attendance, total attendance, and payroll (statistically

significant in each) than *current year* win percentage. Previous year winning percentage displayed much lower p-values in both the FE and RE tests, yet it did not quite reach statistical significance in the FE test. Average home attendance was a statistically significant predictor of revenue in the OLS and FE tests in Model 2 and Model 3, but not in any other scenario. This was likely due to the inclusion of previous year payroll in these models, which in itself is predictive of home attendance. Lastly, franchise age was able to achieve moderate significance in the FE and RE tests of all three models. This inconsistency is likely a result of franchise age being a better predictor of payroll than of revenue, so there were again some overlapping effects inherent in the model.

As a whole, these models, while very simplified, were able to predict revenue fairly well. The OLS, fixed effects, and random effects tests generated R-squared (a measure of explanatory power) of about 0.75, 0.50, and 0.71, respectively.

DISCUSSION

Modern professional baseball franchises monetize the entertainment created by their teams' performance not only by filling seats at their stadium, but also by broadcasting their games on TV and radio and selling memorabilia and concessions. For the past decade, team values have escalated greatly in large part due to media rights contracts and the creation of regional sports networks (RSNs). As these alternative revenue sources have grown, the impact of teams' investment in players has become more ambiguous; however, the results of my analysis indicate that payroll investment indeed is a key variable impacting the value of professional baseball franchises, and its effect is much more pronounced than some other commonly cited variables.

Winning percentage did not have nearly as strong an impact on financial performance as I anticipated, or as previous research has suggested. MacDonald and

Reynolds (1994) showed winning as statistically significant in predicting the revenue of a team, and Yilmaz and Chatterjee (2003) found wins to be directly correlated to attendance and, therefore, revenue. The results of my analysis do not necessarily support these conclusions, as winning percentage was found to be a statistically insignificant component of revenue in my tests. There are a few possible explanations for this departure, one of which being the time period analyzed. The conclusions of MacDonald and Reynolds may have been valid in 1994, but baseball has changed substantially since then with the explosion of watching live sports on TV and the sharp increase in contract values as premier players have begun frequently signing rich, multi-year contracts. Similarly, my analysis agrees with Yilmaz and Chatterjee's conclusion that winning is predictive of attendance (P-value=0.000); however, the relationship between attendance and revenues using my data has much lower statistical significance (P-value=0.095). This may also be a result of alternative sports consumption methods (e.g. TV, mobile device) accounting for increasing portions of franchise's revenues. In fact, total attendance to MLB games is 3.0% *lower* today than it was in 2006, while revenues have appreciated at a 6.0% annualized clip. While it remains true that winning brings fans to the ballpark, it seems that attendance may no longer be a true substitute for revenue because of the escalation of alternative revenue sources.

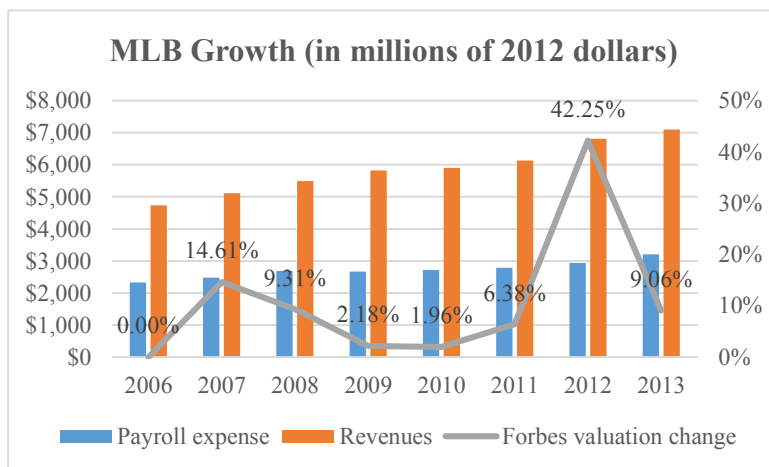
Does Winning Generate Revenue?

	<i>Coef.</i>	<i>Std. Error</i>	<i>P-value</i>	<i>R-squared</i>
Current year winning percentage	18,400,000	28,500,000	0.519	0.103
Previous year winning percentage	73,000,000	29,300,000	0.014	0.170

Though winning percentage did not seem to have a material impact on revenues in the current year, *previous year* winning percentages displayed a much stronger

relationship. Last year's winning percentage was a better predictor of the current year's home attendance, payroll, and revenues than the current year's winning percentage (see table on previous page). I attribute this to the possibility that winning in one year generates interest and excitement in a team, and while attendance and financial figures may not reflect this change immediately, the team is likely to see higher attendance numbers and greater media attention in the following year, as the market has built in an expectation of team performance. Nevertheless, while previous year winning percentage by itself explained 17% of revenue (compared to 10% for current year percentage), it was statistically significant only at the 95% confidence level, and it lost its significance when incorporated as part of the multivariate revenue model. This loss is perhaps a result of multicollinearity (i.e. including both winning percentage and attendance as components of revenue may distort the relationship because they themselves are correlated).

While winning, attendance, and tradition produced ambiguous and inconsistent results as predictors of revenue, payroll and market size proved to be extremely



powerful variables. Not only is current payroll correlated with revenues in general, but historical data shows that both payroll *and* payroll from the previous year were predictive of revenues in the current year, even after controlling for the impact of the same teams being included in each year of analysis. Because last year's payroll was equally or more

predictive of current year revenues, these results suggest a *causal* relationship between salary investment and top-line growth. To confirm this relationship, I performed identical tests substituting three other similar variables in the place of payroll: average salary, total contracts value, and a dummy variable indicating whether or not a team has a “megastar” on its roster, which I defined as any player making \$20 million or more that season (adjusted for inflation). Each of these variables captures a team’s investment in players slightly differently than payroll, yet the results from each were strikingly similar, and my hypothesis held true in each case. In other words, the data indicates that managers achieve substantial returns by investing in high-quality players – both in the current year as fans are excited about watching their team play, and from previous years as fans have generated an expectation of on-field success. Because professional sports franchise values are driven by revenues, it can be concluded that, all else equal, payroll investment increases franchise value.

Payroll does not tell the whole story, however. Another critical element impacting valuation is the size of the market in which teams play. Researchers have frequently examined the impact that market size has on the business of baseball, and they have concluded that larger-market teams have a distinct advantage in obtaining and retaining the best players and, consequently, these teams achieve much greater on-field success and generate substantially greater sales. The results of my analysis overwhelmingly support these conclusions, as market size was positively and significantly predictive of revenue no matter how I tweaked my analysis or what type of regression I performed.

Additionally, payroll and market size, while correlated highly at 0.613, do not have as strong a relationship as expected. A simple OLS regression between the two shows market size as being positively and statistically significantly related to payroll; however, this result is misleading because larger-market teams tend to have higher absolute payrolls due to their greater financial resources, and it does not account for the fact that some teams, like the Yankees, invest highly in players every year (i.e. year-to-year results are not independent of one another). To more accurately examine this relationship, I performed a fixed effect regression, which accounts for the team effect. The results of this test were starkly different (see table below), showing the relationship between payroll and market size to be weak and statistically insignificant after controlling for the use of panel data. These results are critical because they show that not only were payroll and market size predictive of revenue, but they were *independently* so. Because of their independence and statistical significance in every test that was performed, payroll and market size stand out as the two most critical variables impacting franchise value.

The Impact of Market Size on Payroll

	<i>Coef.</i>	<i>Std. Error</i>	<i>P-value</i>
Ignoring the "team effect"	5.238	0.427	0.000
Controlling for the "team effect"	2.688	7.465	0.719

My analysis was subject to a number of limitations. First, I only used data from 2006 to 2013. It would be interesting to perform similar tests in, say, five or ten years when the sharp growth in contract values slows and the nature of the modern MLB labor market becomes more apparent. It would also have been informative to use older data as well to observe how the importance of payroll investment has changed over time. Another limitation of my paper is that my only source of revenue, debt, and operating

income figures over time was *Forbes*, whose numbers, while widely referenced, are *estimates*, as teams do not publicly release financial data. In addition, because the purpose of my analysis was to determine the impact that *payroll* has on franchise value, I formulated only a simple five-variable regression model to explain revenue. This model was not exhaustive (i.e. it does not explain 100% of revenue). My conclusions from this model also were made with the substitution of revenue for franchise value, under the assumption that previous research is correct that sports franchises should be valued based on their revenues.

Additional research should be done to create a model that predicts a greater portion of revenue. While payroll and market size proved to be very strong variables in my model, there are a number of variables that I did not include directly, such as management changes, quality of venue, and the presence of regional sports networks. Moreover, additional models could better account for the impact of multicollinearity on the explanatory power of the components of revenue used in my model. Further research should also examine how past and current owners valued their franchises before buying them, whether or not these values accurately reflected a fair market price, and whether the investors were profit-maximizers. This may also include developing alternative valuation methodologies for professional sports franchises, as simple multiples of revenue or enterprise value may be limited due to the growing complexity of teams' business models and the diminishing profitability of many franchises' operations.

IMPLICATIONS

The results of my analysis suggest that the scope and efficiency of MLB franchise owners' investment in players has a fundamental and critical impact on the value of their

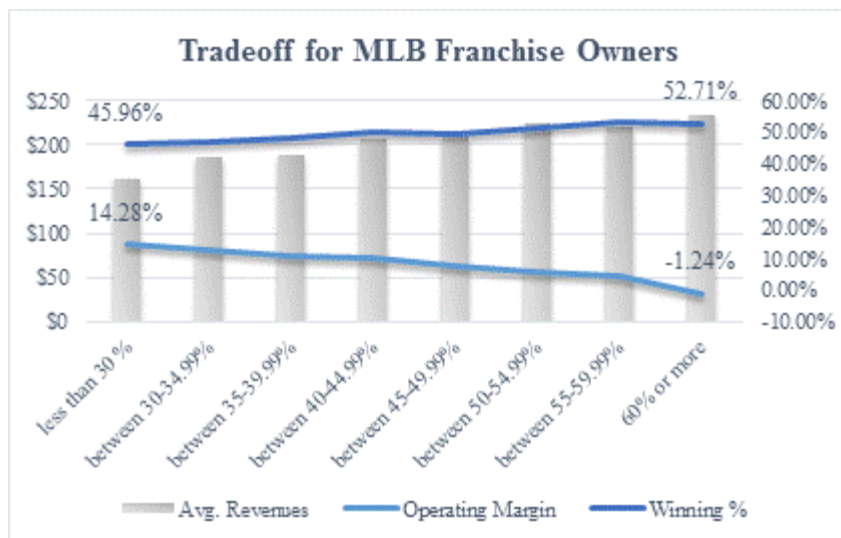
team. This conclusion may seem obvious, as on-field performance is essentially the “product” that teams sell to consumers, but the extent of payroll’s impact may not have been previously clear. Recent publications have attributed the escalation in league revenues to the growing consumption of sport through alternative avenues and the value of large Regional Sport Network contracts. Both of these factors have certainly propelled revenue growth, but what brought them about? The strength of payroll as a predictor of revenue in my results may suggest that payroll investment contributes indirectly to the popularity of electronic sport consumption and the potential for teams to create RSNs, particularly in large markets.

The entertainment market is substantially more prevalent in larger markets, where sports teams compete not only against one another, but also against other sources of entertainment. Teams in the large markets routinely have inflated salary expenses and generate greater revenues, and it is primarily these markets whose fortunes have escalated so greatly in the last decade. In 2006, *Forbes’* valuations of the six teams that share the three largest MLB markets – New York, Los Angeles, and Chicago – were 12.6% larger than the value of the franchises in the ten smallest markets combined. In 2013, the values of the “megamarket” franchise values ballooned to be 37.6% larger than those same ten clubs. This change reflects the reality that while the league as a whole has grown significantly, this growth has been far from evenly distributed. Because the marginal value of winning is much higher in the larger markets, these teams have been investing more heavily in top-tier players than their small-market counterparts. While my results indicate that owners who wish to grow the value of their franchise should invest more in payroll, not all owners will be able to do so in reality because the number of players

deserving of the highest salaries is finite, and some teams are more likely to pursue and sign them than others. The additional payroll investment by large market clubs enhances their already superior potential to reach TV deals and grow media-based revenues. This inherent imbalance makes true competition virtually impossible, more so in the MLB than in any other professional sports league due to the absence of a salary cap.

Though teams in the biggest metropolitan areas achieve higher returns on payroll investment, the fact that payroll was a statistically significant predictor of revenue even after controlling for the team effect indicates that payroll investment is still rewarding for small-market clubs. Modern franchise owners should understand that their investment in players has a direct and measurable impact on winning, attendance, revenues, and, ultimately, the value of their organizations. Nevertheless, owners around the league have varying goals and differing means by which they hope to achieve these goals. Many managers, particularly those in small markets, opt to avoid pricy free agents and instead focus on streamlining their operations and organically improving their teams by developing players in their farm leagues. Other franchises have elected to abandon investing in players at all, saving substantial salary cost and boosting revenue sharing payments at the expense of team quality (e.g. the Houston Astros). This strategy, while harmful to the quality of the club's product and the loyalty of its fans, produces an interesting situation from a valuation standpoint. Teams that invest less in players historically win fewer games and gross lower sales, but their relative profitability is much higher.

This chart depicts the winning percentages, revenues, and operating margins of teams with varying levels of relative payroll investment



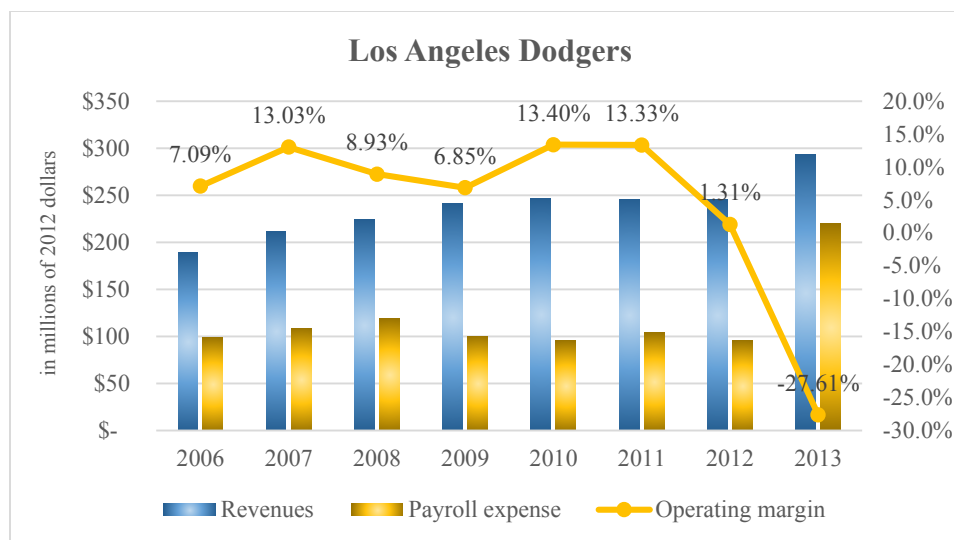
(as measured by payroll as a percent of revenue). Notice the trends that teams that pay out more in salaries tend to have higher revenues, and teams that pay out more than 60.0% of their revenue have winning percentages nearly 700 basis points higher than those who distribute out less than 30.0% as payroll (See Appendix C for expanded data). As previous research has indicated, however, this investment comes at the expense of profitability, as operating margin decreases in each group as teams pay out greater portions of their revenues as salaries. The most common traditional valuation model is the Discounted Cash Flow Analysis (DCF), which values organizations based on the projected net cash flows they will generate. Companies that earn higher returns on their investments (ROI), tend to earn higher cash flows and, therefore, higher valuations. Valuing MLB franchises based on their *revenues*, however, seems to contradict traditional valuation methodology, as teams that invest more generate more revenues (and receive higher valuations) almost always have low or negative profit margins. A DCF model would still be able to value these franchises though, if the teams are expected to generate positive cash flows in the future; however, given the sharp increase in

outstanding contract liabilities, the prospect of profitability for many teams does not appear favorable. Owners must find an optimal level of payroll investment that balances their desire to win with their desire to run a sustainable economic entity. In 2006, the average MLB franchise grossed \$158 million in sales with total contracts value of just \$77 million. Observing the table below, the ratio of contracts value-to-revenue has increased every year since. Team's payroll liability was just 49% of revenues in 2006, but now sits at 149% of revenues.

<i>in millions of 2012 dollars</i>	2006	2007	2008	2009	2010	2011	2012	2013
Revenues	\$158	\$170	\$183	\$194	\$197	\$205	\$227	\$237
Total value of team's contracts	\$77	\$93	\$119	\$128	\$143	\$191	\$226	\$352
Ratio	0.49	0.55	0.65	0.66	0.73	0.93	1.00	1.49

CONCLUSION

Reverting back to my original discussion of the recently-sold Los Angeles Dodgers, does payroll add value? Between 2006 and 2012, the Dodgers' payroll teetered around \$100 million, revenues were noticeably stagnant, and growth trailed the MLB as a whole. After the acquisition of the franchise by Magic Johnson & Company, management began to take the club in a different direction. The new ownership team ramped up payroll investment 130% to nearly \$220 million in 2013 (see chart on following page). Fans of the franchise were ecstatic at the bright prospects of the team, now armed with an arsenal of high-ticket players. Home attendance jumped 13.3% in 2012 and 12.6% in 2013, franchise revenues spiked to nearly \$300 million (fourth highest in the league), and in 2013 the team won 91 games and made the playoffs for the first time since 2009.



Once more, while payroll investment clearly created value in terms of winning capacity, brand equity, attendance, and revenues, the Dodgers lost *\$80 million* in 2013, snapping an extended streak of profitability. Though this massive loss may be due in part to transitional or restructuring costs, such a sharp drop in operating income cannot be ignored. Not only did yearly payroll more than double, but the total value of the team's contracts in 2013 was nearly *seven times* what it was prior to the ownership change, increasing from \$154 million to over \$1 billion. These contracts represent an asset in that they are linked to players who have high marginal production values; however, they also represent a massive liability that will place substantial pressure on management to generate sufficient cash flow to service these obligations in years to come. If profits for the foreseeable future are likely to be slim or negative, how much value did management's prodigious payroll investment actually create?

Just as Lewis (2008) asserted, my research has generally confirmed that payroll investment represents a team's fundamental long-term investment in its on-field product and management of consumer demand. Teams achieve a wide range of returns on this investment in terms of winning, attendance, revenues, and operating income. My

findings indicate that additional payroll investment does in fact create value, so long as franchises are to be valued based on their *revenues*. If traditional corporate valuation models (which emphasize future cash flows) were to be used, the values of MLB franchises would likely be materially different. Leaner, smaller-market teams like the Oakland As and Tampa Bay Rays would see a substantial gain in value, while some inefficient large market teams like the Detroit Tigers or Los Angeles Angels would see their values take a hit. If MLB teams were publicly traded organizations required to publish their financial information, much more comprehensive and accurate valuation models would likely exist.

Revenues and revenue multiples may reflect the economic prowess and asset values of the league's franchises, but they almost certainly do not provide an accurate measure of what a profit-maximizing investor would be willing to pay for the clubs. Though the results of my study show that payroll investment is perhaps the most powerful revenue-generating tool, its ability to actually create value depends on a number of other factors, including market size, managerial incentives, contract structure, franchise tradition, fan loyalty, and media interest. It will be interesting to observe whether the rapid increase in contract values is a sustainable trend, and whether franchise values will change for the better or worse.

Fans of America's pastime understand the competitive and economic disequilibrium of the game better than anyone, and they routinely end up disappointed when their team does not live up to expectations. The key takeaway for baseball fans is that while it is easy to blame a disappointing season on a single player or manager, it is necessary to understand that (1) owners have very different incentives, (2) not all

franchises are created equal, and (3) high-ticket rosters do not guarantee success, and may ultimately harm the long-term viability and success of the franchise. As Ken Burns' documentary wisely explained, "It's a game that you can't like if winning is everything. Democracy is that way too."

APPENDIX A: MLB LUXURY TAX DATA

Year	Luxury Tax Threshold	Increase (YoY%)
2016	\$189m	0.00%
2015	\$189m	0.00%
2014	\$189m	6.18%
2013	\$178m	0.00%
2012	\$178m	0.00%
2011	\$178m	4.71%
2010	\$170m	4.94%
2009	\$162m	4.52%
2008	\$155m	4.73%
2007	\$148m	8.42%
2006	\$136.5m	6.64%
2005	\$128m	6.22%
2004	\$120.5m	2.99%
2003	\$117m	

	Luxury Tax Paid ('06-'13)	
	<i>Cumulative Tax</i>	<i>% of total</i>
New York Yankees	\$181,393,945	88.24%
Boston Red Sox	\$11,447,549	5.57%
Los Angeles Dodgers	\$11,415,959	5.55%
Detroit Tigers	\$1,300,000	0.63%
Total	\$205,557,453	100.00%

Source: http://www.stevetheump.com/luxury_tax.htm

APPENDIX B: MLB REVENUE BREAKDOWN, 2013

in millions of dollars

		Franchise Revenues						
Team	Principal Ownership	Team Revenue	Gate Receipts	Concessions	Sponsorship	Media Rights	Parking	Revenue Sharing
NYN	Steinbrenner family	\$570	\$265	\$53	\$84	\$158	\$0	-\$97
LAD	Guggenheim Baseball Management LP	\$325	\$81	\$29	\$39	\$100	\$10	-\$32
BOS	John Henry, Thomas Werner	\$405	\$174	\$36	\$40	\$89	\$0	-\$56
NYM	Fred Wilpon, Jeff Wilpon, Saul Katz	\$265	\$72	\$26	\$55	\$120	\$9	-\$27
CHC	Ricketts family	\$320	\$128	\$30	\$18	\$90	\$3	-\$39
SF	Charles Johnson	\$300	\$126	\$26	\$28	\$88	\$9	-\$21
BAL	Peter Angelos	\$210	\$52	\$14	\$18	\$80	\$2	\$20
LAA	Arturo Moreno	\$275	\$78	\$24	\$27	\$100	\$7	-\$28
PHI	David Montgomery	\$315	\$142	\$28	\$26	\$73	\$9	-\$29
TEX	Ray Davis, Bob Simpson	\$260	\$79	\$22	\$19	\$81	\$6	-\$15
CHW	Jerry Reinsdorf	\$225	\$59	\$17	\$25	\$84	\$9	-\$8
TOR	Rogers Communications Inc.	\$210	\$44	\$12	\$17	\$65	\$2	\$15
WAS	Theodore Lerner	\$230	\$85	\$20	\$18	\$83	\$6	\$11
DET	Michael Ilitch	\$245	\$95	\$19	\$21	\$85	\$8	-\$1
STL	William DeWitt Jr.	\$250	\$105	\$25	\$26	\$62	\$0	-\$6
HOU	Jim Crane	\$205	\$45	\$12	\$23	\$76	\$0	\$9
ATL	Liberty Media Corp.	\$225	\$52	\$20	\$22	\$103	\$5	\$0
SEA	Nintendo of America Inc.	\$225	\$48	\$17	\$29	\$83	\$4	-\$1
MIN	Pohlad family	\$215	\$87	\$18	\$25	\$64	\$0	\$6
SD	Ron Fowler, Seidler and O'Malley families	\$195	\$34	\$14	\$20	\$60	\$5	\$20
CIN	Robert Castellini	\$205	\$54	\$15	\$19	\$66	\$6	\$22
MIL	Mark Attanasio	\$205	\$64	\$18	\$18	\$55	\$6	\$19
PIT	Robert Nutting	\$185	\$39	\$14	\$15	\$56	\$0	\$35
ARI	Ken Kendrick, Mike Chipman, Jeff Royer	\$195	\$41	\$12	\$23	\$75	\$3	\$27
MIA	Jeffrey Loria	\$200	\$65	\$12	\$10	\$64	\$0	\$32
OAK	John Fisher, Lewis Wolff	\$175	\$33	\$9	\$12	\$65	\$5	\$36
COL	Richard Monfort, Charles Monfort	\$195	\$46	\$22	\$18	\$71	\$3	\$13
CLE	Lawrence Dolan, Paul Dolan	\$190	\$30	\$10	\$18	\$81	\$0	\$30
KC	David Glass, Dan Glass	\$180	\$37	\$11	\$14	\$53	\$4	\$36
TB	Stuart Sternberg	\$175	\$30	\$8	\$14	\$59	\$3	\$29
Total		\$7,375	\$2,290	\$593	\$741	\$2,389	\$124	\$0

Source: Bloomberg Billionaires; <http://www.bloomberg.com/infographics/2013-10-23/mlb-team-values.html>

APPENDIX C: PAYROLL AS A PERCENT OF REVENUE

Payroll as % of Revenue	# of Teams	Operating Margin	Avg. Forbes Valuation	Avg. Revenues	Group Revenue Multiple	Winning %
less than 30 %	20	14.28%	\$374,485,695	\$161,295,418	2.32	45.96%
between 30-34.99%	16	12.64%	\$474,204,595	\$185,434,203	2.56	46.77%
between 35-39.99%	38	10.84%	\$507,992,703	\$188,610,077	2.69	48.42%
between 40-44.99%	42	9.84%	\$578,966,216	\$206,771,797	2.80	49.91%
between 45-49.99%	40	7.65%	\$535,645,023	\$208,917,478	2.56	49.39%
between 50-54.99%	42	5.66%	\$648,114,869	\$223,573,390	2.90	51.40%
between 55-59.99%	18	4.73%	\$609,802,775	\$220,198,802	2.77	53.27%
60% or more	24	-1.24%	\$714,367,919	\$234,358,068	3.05	52.71%

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