Incentive Clauses: The Risks and Rewards in Major League Baseball Contracts

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Abstract:

This paper attempts to expand the agency theory literature in baseball, by examining the role that incentive clauses have in player statistical performance and front office acquisitions. This paper most resembles Paulsen's study on the relationship between player performance and contract options. Data for this paper was gathered via "Cot's Baseball Contracts", for data on player contract information, and "Baseball-Reference.com" and "RotoWire" for information on player statistical performance, age, and injury history. Using logistic and linear regression on hitters, starting pitchers, and relief pitcher groups, this paper examines whether certain player traits and past performance can predict the prevalence of incentives in contracts, the impact of incentive clauses on the average salary of a player, and whether the presence of incentives are associated with future performance outcomes. Ultimately this paper finds that past player performance did seem to impact the presence of incentive clauses. In addition, apart from starting pitchers, a player's AAV was negatively associated with incentive clauses. Finally, while analyses on starting pitchers did not yield expected results, the analyses for hitters and relief pitchers did indicate a statistically significant association between incentive clauses and improved player performance, and produced an interesting relationship between the type of incentive given to a certain player, and player performance. Possible areas to expand on this research include gathering more data, and performing this analysis on each position group. [1]

[1] This paper would not have been possible without the contributions and helpful comments of my advisor, Professor Josh Congdon-Hohman, of the College of the Holy Cross Department of Economics and Accounting, in both forming this topic and how to evaluate it. I would also like to thank Professor Justin Svec, for his assistance in crafting this topic.

1 Introduction

This paper attempts to examine the role that incentive clauses in player contracts in Major League Baseball have, both in front office decisions made when signing a player to a contract, as well as the performance of a player in the ensuing years of their respective contracts, with the hope of expanding the economic literature in the context of agency theory. The relationship between employers and workers examined in agency theory is pivotal in aligning the goals of workers with the goals of companies, and is worth examining in the rather unique principal-agent relationship that arises in baseball. Specifically, this paper attempts to answer three main questions: whether certain characteristics of players can indicate if they have incentive clauses in their contracts, the impact that incentive clauses have on player guaranteed salaries, and whether relevant player performance statistics were impacted by players having incentives in their contracts. To explore this topic, data was collected via the websites, "Cot's Baseball Contracts", for information on player contracts, and "BaseballReference.com" and "RotoWire" for information on player statistics and player injury histories. Based on a series of regressions, this paper finds that a player's past performance is the most prominent trait in predicting whether a player is targeted for an incentive. In addition, the average salary of a player's contract seems to be negatively associated with the presence of an incentive clause. Finally, a player's statistical performance seems to be associated both positively with having an awards-based or performance-based incentive in their contract, and negatively associated with an appearance-based incentive being present in a contract, creating an interesting dynamic in regards to the type of player receiving each incentive, and their future performance.

The remainder of this paper will be organized into eight sections. Section 2 will provide some context in regards to the broader economic topic this paper relates to, namely agency theory.

Section 3 will provide a review of the literature written thus far on the role of agency theory in baseball. Section 4 will discuss the hypotheses for this paper, followed by Section 5 explaining the data used in exploring these hypotheses, and Section Six providing the empirical approach for the aforementioned questions of this paper. Section 7 will provide the results from the empirical analyses, and Section 8 will conclude the paper by noting the results of the paper in the context of the previous sections. Finally, Section 9 contains a number of tables that will be referred to in various sections of the paper.

2 Background: A Brief Introduction to Agency Theory

The inspiration for this paper finds its roots in agency theory. The concept of agency theory involves problems that can occur between principals, meaning employers, and agents, meaning workers, in the workplace. Eisenhart (1989) notes that when there are improper or costly methods of monitoring workers, this provides the grounds for agents to exert suboptimal effort, which results in lower productivity for a company. In light of this, agency theory attempts to find the most efficient contracts between agents and principals; this is manifested in incentives being built into contracts, which compensate agents for hitting certain work goals created. Shavell (1979) notes the significance of incentives mitigating risks for the principles, while providing the proper goals to the agents that could increase productivity. Thus, agency theory is a key concept in the workplace, in that it can assist in aligning the goals of the agents and the principals, thus maximizing productivity. In other words, agency theory assists in establishing a common goal structure for firms and laborers. In addition to assisting in the creation of a common goal structure, agency theory also holds weight in the workplace, in that it is applicable to multiple environments, such as factory jobs, agriculture, professors trying to achieve tenure, and the salesforce. Fong and Tosi Jr. (2007) note the applicability of agency theory, not only to the

corporate governance of large organizations, but also to any situation in which the principle relies on the output and productivity of the agent. To provide an example of agency theory's wide range, Stiglitz (1974) attempts to examine the role of incentives and risk sharing in sharecropping, while Bonazzi and Islam (2005) attempt to build a model in the context of agency theory, in order to effectively model the behavior and performance of a company's CEO.

In addition to the aforementioned examples where agency theory is applicable, another medium, perhaps a rather unique one, through which agency theory can be explored is professional sports. Mason and Slack (2007) note the uniqueness of agency theory in the realm of sports, and the interesting possibilities in examining the player-team relationship in constructing an optimal contract. One factor, which makes agency theory in sports unique, is the contract elements of sports leagues. Features, such as player salaries, contract lengths, and types of incentives are rather distinct from other workplace environments, making the exploration of agency theory in sports vastly intriguing; it is difficult to find another principal-agent relationship, in other economic sectors, with so few agents, and such massive contract disparity, both in length and amount. In addition to the contract features, the sheer amount of statistics and player monitoring available, in order to quantify player performance, provides another distinction in studying agency theory in sports, since data and managerial monitoring are readily available to an organization, when making decisions on player acquisitions. Further, the efficiency of player monitoring has also increased with the rise of sabermetrics and more advanced statistics in evaluating players. However, in contrast to the high levels of monitoring available, the randomness involved in player performance, such as a hitter connecting with a pitch, or a pitcher performing better than expected for a longer period of time, may create divergences from common agency theory, in that there are less explicit connections between

player performance and effort. Unlike other workplaces, though a player may take all of the necessary steps in preparing for a game, such as studying film or receiving treatment from team doctors, the amount of luck involved with player success may lead to players underperforming, despite their efforts. Thus, the introduction of randomness makes sports a unique medium for agency theory, in that the typical relationship between agent effort and productivity is much more apparent in other environments. Finally, expanding beyond the arguments introduced by Mason and Slack, the emergence of social media, and the investment of the public in player-team outcomes, which is apparent by the popularity of sports media, and the curiosity of the public in the finances behind player acquisitions, create a further distinction between professional sports and other workplaces, in that possible external pressure from the public may be added to contract decisions. Therefore, the uniqueness of professional sports leagues from other work environments makes the study of agency theory in this realm a rather enticing endeavor.

3 Literature Review on Agency Theory in Baseball

In examining where agency theory has been studied in professional sports leagues, three topics which have dominated the agency theory literature in the context of baseball include the relationship between players and various contract features, the impact of an organization's structure on its player acquisition decisions and performance, and the levels of shirking behavior noticeable at various points in a player's career. One example of the first topic listed above is the relationship between player contracts and salaries. Krautmann and Oppenheimer (2002) examine the relationship between contract lengths, player performance and salary, using a simple linear regression model. The authors find that players who perform at the highest levels receive the longest contracts with the highest salaries; however, as the length of contracts increase, the return on performance may decline for teams, posing an interesting question of whether teams should

pursue rather risk-averse, long-term contracts for their key players, or take a risk and attempt to replace them on the open market with short-term contracts. Expanding further, Kahn (1993) examines whether there is a difference between contract salaries and length for arbitration eligible players and free agent players. A player is deemed arbitration-eligible if they have accrued at least three years of service time, but no more than six years, which allows a player to negotiate a higher salary or longer contract length with their current organization. If the player and team cannot agree on a contract, an impartial arbiter is tasked to choose the final contract offer, either the player's desired contract or the team's, with no compromise. After their sixth year of service, a player can then negotiate with any organization, by having free-agent eligibility. In his analysis, Khan finds that a player being arbitration or free agent eligible, has no impact on player salary, but a player being a free agent does increase the number of contract years they are given.

In addition to player performance and contract lengths, the agency theory literature in the context of baseball has also examined the impact of a team's structure, on player performance and front office acquisitions. Healy (2008) offers insight as to whether teams suffer from recency bias when offering contracts and evaluating player performance. Using a variety of regression models, Healy finds that although teams do suffer from recency bias, organizations that are most successful use past data more effectively in their evaluation process for future performance, while less successful teams suffer more from recency bias, resulting in a misallocation of resources. In addition to organizational evaluation processes, Richards and Guell (1996) examine how the goals of an organization affects player acquisitions, specifically whether organizations are more focused on increasing revenue or team performance. In their models, the authors find that the revenue-oriented approach can lead to practices, such as allocating team resources to one

superstar and surrounding him with sub-par talent, in order to generate revenue around the superstar player. However, teams more focused on winning games, and thus allocating resources to multiple positions, could generate revenue in their own right, but this hinges on team success. Finally, Kahn (1993) discusses the impact of managerial quality on team and individual success. Using linear regression models, Kahn finds that higher managerial quality results in a significant increase in winning percentage, as well as individual performance, thus showing the direct benefits of improved player monitoring. Therefore, along with examining the relationship between players and contract features, agency theory in baseball has also examined how the goals and structures of organizations affect both player acquisition and performance.

A final topic, which has been heavily explored in the literature on agency theory in baseball, is player shirking, or the lack of effort, during different periods of a contract, a concept often measured in a typical workplace. Krautmann and Solow (2009) measure shirking levels during different periods of long-term contracts, controlling for players likely at the end of their career and not expecting another contract offer in free agency. The authors show that shirking behavior for players expected to sign a new deal is offset by the incentive to sign a new contract in a future free agency period. In contrast, the disincentive of a fully fixed, guaranteed contract promotes shirking behavior for players likely to retire upon their contract expiring, or not expecting to achieve a similar salary in the next free agency period. However, though these conclusions seem reasonable, Krautmann and Donley (2009) argue that the methodology used in order to quantify shirking behavior yields mixed results, finding that shirking behavior was not present when measured using player performance, yet appeared when measured by the marginal revenue product of a player. This supports Krautmann's paper (1990), which argues that the noticeable stochasticity in baseball productivity results in tests for shirking having mixed results.

Thus, in the context of baseball, typical shirking behavior, though an important concept, can be difficult to quantify given the level of luck involved in player performance.

Though the literature for agency theory in baseball is well-established, a few shortcomings seem to appear. One example is the lack of research done on the effect of incentives that are built into player contracts, in both player performance and acquisition, which is a rather glaring hole in the literature, given the importance of incentives in agency theory. In light of this point, not only would the inclusion of incentive clauses help explain some of the motivating factors behind player performance, but it would also help assist in expanding the research on agency theory in baseball. Hence, this paper hopes to expand the topic of agency theory in baseball by explicitly examining the role of incentive clauses in the player-team relationship. This paper topic and the models take inspiration from research done by Paulsen (2018) on the contract options that are implemented into player contracts, given that Paulsen examines which type of option most incentivizes player effort. Using a regression that utilizes a player's age, contract length and salary, and performance as key variables, Paulsen finds that club options were most likely to be exercised in order to control for player uncertainty, though these options may result in low player performance and effort, while player options incentivize effort, due to the level of control designated to players. This research is akin to the issue of incentives built into contracts, given that teams may be uncertain about the future performance of a certain player, and may use methods such as contract options or incentives, to increase player performance and effort, while possibly minimizing risk.

4 Hypotheses

4.1

This paper attempts to explore three specific questions in regards to incentive clauses in baseball contracts: whether certain characteristics of players can indicate if they have incentive

clauses in their contracts, the impact that incentive clauses have on average player guaranteed salaries, and whether relevant player performance statistics were impacted by players having incentives in their contracts. In answering this first question, this paper attempts to explore whether certain player traits, often deemed high risk in the prevailing literature, signal if a player has an incentive clause in their contract. In particular, this paper examines whether a player's injury history, age, performance averages and variance for different statistics over the last three years, and performance statistics last year, can predict whether they have an incentive clause in their contract. In forming a hypothesis on this question, this paper takes inspiration on the findings from Krautmann and Solow (2009) on the negative correlation between player performance, age and injury history, as well as Healy's (2008) findings on how recency bias influences front office decisions. In relating these findings to incentives, this paper expects that negative player performance, older age, and a series of previous injuries, indicate that a player is more likely to have incentives in their contract. Further, this paper also expects that recency bias negatively impacts incentives being in a contract, due to the expectation that players who perform better more recently would receive more guaranteed money from teams, due to their recency bias tendencies. Thus, this paper makes a more formal prediction to represent Hypothesis 1 below:

Hypothesis 1: A player's age being higher, having a major injury in their career, and having a higher performance variance and relatively poorer performance in the previous year make a player more likely to have an incentive clause in their contract.

4.2

In addition to the type of player targeted for incentive-based contracts, this paper will also attempt to answer the impact of incentive clauses on a player's salary, particularly the average annual value (AAV). After evaluating the impact of typical variables associated with player

salaries, such as a player's age, career performance, and injury history, this paper will attempt to explain any possible difference not captured in the aforementioned variables, by introducing whether a player has incentive clauses in their contract, into the analysis. In doing this, this may indicate whether players were replacing possible guaranteed money in their salary, with these incentive clauses. Based on the findings from Krautmann and Oppenheimer (2002), that improved player performance leads to longer contract lengths and higher contract values, as well as the predictions from Hypothesis I on past poor performance making a player more likely for incentive-based contracts, this paper predicts that:

Hypothesis 2: Incentive clauses being in a contract are negatively associated with a player's AAV.

4.3

A final area which this paper attempts to address is answering how player behavior changes in light of having incentive clauses in their contracts, particularly how this impacts their future performance. To provide an example of one statistical category examined, a pitcher with an appearance-based incentive, such as the number of innings they pitch, may be inclined to avoid stints on the DL when faced with a possible injury, in order to maximize their chances of hitting the incentive. In addition, a hitter with an appearance-based incentive, such as the number of games played, may be averse to taking actions that may cause injuries, such as stretching a single into a double or stealing a base, in order to assure that they stay healthy. It is also worth examining whether having any type of incentive in a contract impacts statistical performance in categories outside the confines of the incentive. A possible example of this is whether a player's WAR is impacted by having an awards-incentive in their contract. Exploring this dynamic is inspired by Paulsen's (2009) research on the impact of club, player, mutual and vesting options on player performance. Thus, though this paper predicts that players who perform worse in the

past are more likely to have incentive clauses in their contract, this paper also predicts that incentive clauses are positively associated with future player performance:

Hypothesis 3: Incentive clauses positively impact player performance in categories towards which incentives are geared, as well as those outside the confines of the incentive clauses.

5 Data

In analyzing the hypotheses outlined in the previous section, a sample of data, over the period 2009 to 2019 is examined. Though data was available for the year 2020 and 2021, these years were omitted due to the Covid-19 pandemic shortening the 2020 season to 60 games, thus altering the typical analysis that may have went into player acquisitions in the 2020 offseason, as well as altering the incentive clauses in player contracts. Data was collected via three sources for two categories: information on MLB players' contract information and information on player statistical data. To gather data on the former category, the database, "Cot's Baseball Contracts", which is run by its parent website "Baseball Prospectus", was used. This website provides information in regards to the structure of a player's contract, including details both for current and past contracts a player has signed, via inside sources from various organizations and published reports. In the context of this paper, this website provided insight into the incentive clauses built into a player's contract, including information such as the type of incentive. These include performance-based incentives, appearance-based incentives, or awards based incentives. "Cot's Baseball Contracts", also captures the amount which the incentive is worth, and whether there are multiple "levels" to the incentive, meaning additional money that can be earned by performing beyond the baseline performance level that triggers the initial incentive. A complete list of these variables, with a brief explanation, can be found in Table 1.

Before proceeding, it would be helpful to explicitly outline how each type of incentive is defined. A performance-based incentive may refer to a certain amount of money being earned based on a player achieving a certain statistical outcome, such as a player earning $50,000 for hitting 25 doubles in a season. An appearance-based incentive refers to a player earning a certain amount of money based on playing a certain amount of games, reaching a certain number of at-bats, or pitching a certain number of innings. A simple example is a pitcher receiving $100,000 for pitching 200 innings. To provide an example of an incentive clause with levels in it, a pitcher may earn $75,000 for pitching 120 innings, and an additional $50,000 for every 10 additional innings. Finally, an awards-based incentive refers to a player earning a certain amount of money by receiving an award at the end of the season, such as a player earning $150,000 for winning a MVP award. If levels were introduced in this context, a player may earn $150,000 for winning a MVP award, but may also earn $75,00 by finishing second in the voting or $50,000 for finishing third in the voting.

In addition to explaining each incentive type, it would also be prudent to explain a few other incentive-related variables, which may be unclear:

Service Time: This refers to the amount of time a player has accrued in the MLB prior to signing their contract, rather than simply how many years a player has been in the league. This is necessary, in order to account for players who are arbitration-eligible in years four through six, and players who are typically free-agent eligible when they have accrued six years of service, and are entering their seventh year. This also accounts for the fact that service time refers to players accumulating *full* years of service, as opposed to simply counting the number of seasons a player has been active for, with no regard to injury and how many games a player appeared in.

Offseason Year Contract Signed: This refers to the calendar year in which a player's contract corresponds to. To provide an example, a player's contract which begins in the 2019 season is designated the year 2019 in the Offseason Year Contract Signed variable. Though the free agency period typically occurs in the months following the previous season (i.e. the 2019 free agency period typically occurs in November 2018 and through March 2019, following the 2018 season), this variable is formatted in this manner, in order to align the first year of a player's contract, with the statistical season it corresponds to.

AAV: This refers to the Average Annual Value of a contract, or the contract length divided by the contract years. This variable is used in place of the salary of a player, due to the salary of a player often being front-loaded or back-loaded in a contract of multiple years. This practice may be a result of either a player's preference, or a team's current accounting situation necessitating a restructuring of their payroll.

Major Injury: This binary variable was determined on a case-by-case basis, with players typically qualifying for this category if they missed multiple months or an entire season, due to injuries such as tearing a major muscle, requiring Tommy John Surgery or breaking a bone, at some point in their career prior to signing their contract. Information for this variable was collected via the websites "FoxSports", and "RotoWire".

Data for a total of 1,329 contracts were gathered in the period 2009-2019 period. Given that many players often signed multiple contracts during the period, 710 of these observations were unique. It is worth noting that "Cot's Baseball Contracts" only tracks the contract information for active players in a given year. Thus, in order to gather this contract data, a website archiving machine was used in order to examine the data from previous years. However, the machine was only able to "travel" back to 2013, meaning contract data gathered from 2009 to 2012 hinged on

a player being on an active team in 2013. Though this may change the analysis of this paper, the results of the regression analysis were not substantially impacted by excluding this data, and thus the data was left in for analysis.

In gathering the statistical data for this paper, including more traditional statistics such as the number of games played or home runs hit, the award history of a player, as well as some meaningful advanced metrics that help evaluate player performance, the website "Baseball-Reference.com" was utilized. This website is a trusted source for current and historical sports data, and has been a source for both traditional and advanced statistics for many organizations and media outlets throughout the 21st century. Based on the players collected from "Cot's Baseball Contracts", statistical information was gathered, corresponding to each year of a player's contract. A complete list of the statistical variables studied can also be found in Table 1. Similar to the contract data variables, it is worth providing a brief explanation for what some of these statistical variables mean and how they are calculated, given that they will be used in the regression analysis:

OPS ("On-base-percentage plus slugging percentage"): This variable is calculated simply by adding a player's on-base percentage, and a player's slugging percentage (total number of bases divided by the number of at-bats). This measure helps to track a player's ability both to get on base, and hit for power.

WAR/oWAR/dWAR (Wins Above Replacement): This variable calculates how many more wins a player can generate than a possible replacement, either a minor-league player or a free-agent, at the same position. For non-pitchers, this is calculated by subtracting the quantity of runs generated or lost by a player in batting, baserunning, double-play situations, and fielding, while adjusting for different player positions, from the league average in each of these

categories, and adding these values to the total number of runs generated by the average player subtracted by the replacement player. This measure is significant, in that it attempts to measure the full worth of a player relative to his replacement in a single value. This statistic is broken down further into oWAR and dWAR for the categories above related to offense and defense. For pitchers, this metric is simply calculated by using the number of runs given up by a pitcher, and the number of innings pitched.

FIP: Fielding Independent Pitching refers to a pitcher's ability to prevent a home run, walk or hit by pitch, and cause a strikeout. The formula for this statistic is (13*HR + 3*BB - 2*K)/IP + C, where C is a constant that re-centers the league average. This statistic attempts to control for events which the pitcher has the most control in preventing or causing.

WHIP: Walks-Hits-Innings-Pitched calculates the number of baserunners a pitcher allows per inning, by dividing the number of walks and hits a pitcher gives up by the number of innings pitched. Thus, a lower WHIP is deemed better.

gmLI: This metric is a leverage index, solely for relievers, which measures how much pressure a pitcher faced when they entered a game, based on the inning the pitcher has entered, the number of outs and the number of baserunners inherited upon entering. A gmLI above 1 indicates a pitcher entered a high-pressure situation.

Thus, this statistical data is essential in each portion of the paper, both in measuring the variance in each statistic prior to signing a contract, as well as whether various statistics were impacted by having an incentive clause in a contract.

6 Methodology

In examining each facet of this paper, players will be broken down into a few categories, based on the positions played. In separating positions, players will be broken down into all

hitters, relief pitchers and starting pitchers. A relief pitcher is deemed as such if their start percentage (the games started divided by the number of games pitched) is less than 30% and a starting pitcher if their starting percentage is greater than 70%. Though this removes 31 players from analysis, this helps to clearly define the role a pitcher plays for a team. For hitters, players from all positions other than pitchers will be examined together. Though it is possible to divide position players into more specific categories, such as infielders and outfielders, middle and corner infielders, etc., this paper finds that results did not vary significantly by breaking hitters down into categories, relative to analysis done on all position players. Therefore, this paper utilizes all hitters in analyzing the aforementioned questions, but does refer to the results for infielder and outfielder analyses in each section, for further context. In addition to defining various positions in each manner, it would be prudent to mention which type of players were gathered in the data. Due to aforementioned differences in how a player can negotiate a contract based on being arbitration-eligible or free-agent eligible, the analysis of this paper focuses on players who are eligible for free agency, given they are free to negotiate with any team they desire. This decreases the data examined from 1,329 contracts, to 766.

In analyzing the first hypothesis of this paper, on whether certain player attributes can predict if a player has an incentive clause in their contract, a logistic regression is used, with the dependent variable being whether any type of incentive clause is present in a contract, and the independent variables being various player attributes. An example of the logistic regressions used for a starting pitcher is found below:

$$IncentivesinContract = \beta 0 + \beta 1Age + \beta 2MajorInjury + \beta 3ServiceTime + \beta 4IPLastYear + \beta 5AVGIP + B6VarIP + \beta 7WHIPLastYear + \beta 8AVGWHIP + \beta 9VARWHIP + \varepsilon$$

where the IPLastYear variable represents the number of innings a starting pitcher pitched in the previous season, AVGIP represents the average number of innings a starter pitched between two

and four seasons before signing their contract, and the VarIP represents the variance in the number of innings pitched in the previous three seasons. This description also applies to the pitcher's WHIP values. While the variance is included to measure how consistent the player has been over the last three years, average and previous year variables are included in order to examine whether recency bias plays a role in incentive clauses being in a contract. In light of including these variables, this section of the analysis only examines whether incentives were present in the year after signing the contract, rather than examining the role of these variables in predicting incentives throughout the entire duration of multi-year contracts. This still allows for meaningful analysis, since the incentives in a player's contract typically remain the same throughout its duration. Further, in an effort to limit possible correlation between related statistic variables, the analysis for various statistics is done separately by statistic. The Age, Major Injury, Service Time, and Innings-related variables are used in each regression, and the final three variables are changed for each statistic. Thus, for pitchers, this structure is used to analyze last year's value, the average of the statistic, and the variance of a starter's WHIP, FIP, WAR and ERA. For relievers, the statistics analyzed include: Games Pitched, ERA, WAR, FIP, and WHIP. Finally, for hitters, the same structure is utilized, by swapping the innings-related variables with a hitter's games played. In light of this, this structure is used to analyze the following statistics: HRs, RBIs, WAR, oWAR, dWAR, Plate Appearances, Average and OPS. To provide further context, an example of the regressions used for hitters is found below, with the number of home runs hit as the statistic analyzed:

$$IncentivesinContract = \beta 0 + \beta 1Age + \beta 2MajorInjury + \beta 3ServiceTime + \beta 4GamesLastYear + \beta 5AvgGames + B6VarGames + \beta 7HRsLastYear + \beta 8AvgHRs + \beta 9VarHRs + \varepsilon$$

In examining the second hypothesis on the relationship between a player's AAV and incentives being present in a contract, a linear regression model is used. As briefly mentioned in

Section 4, after explaining how a player's AAV is impacted by variables typically utilized in the literature, namely a player's age, injury history and performance, adding in a variable of whether there is an incentive present in a contract can possibly explain any difference not captured in the aforementioned variables. A similar structure to the logistic regressions is used here, in that in order to avoid any possible correlation between performance variables, separate regressions are utilized. An example of the regressions used for starting pitchers is seen below:

$$AAV = \beta 0 + \beta 1 Age + \beta 2 MajorInjury + \beta 3 ServiceTime + \beta 4 IPLastYear + \beta 5 AvgIP + \beta 6 VarIP + \beta 7 WHIPLastYear + \beta 8 AvgWHIP + \beta 9 VarWHIP + \beta 10 IncentivesinContract + \varepsilon$$

as evident in this example, the statistics used for analyzing the first hypothesis are also used in analyzing the impact these statistics have on a player's AAV. Therefore, for starting pitchers, the Age, Major Injury, Service Time, Innings-related variables, and Incentives in Contract variable, are all utilized in each regression, while the performance statistic is changed, with the statistics being used again including a starter's WHIP, FIP, WAR and ERA. For relievers, the performance statistics analyzed again include Games Pitched, ERA, WAR, FIP, and WHIP. For hitters, a similar structure is again used, with each of the variables used for pitchers appearing in each regression, with the exception of swapping the Innings-related variables for variables related to the number of games a hitter plays, and the performance statistic utilized in each regression being: HRs, RBIs, WAR, oWAR, dWAR, Plate Appearances, Average and OPS. It is worth noting here that this portion of the analysis treats multi-year contracts, and single year contracts as the same, given that the per-year value of a contract is examined.

In examining the final aspect of this paper, on the relationship between the future performance of a player and whether an incentive is present in a contract, a linear regression model is again utilized. In contrast to the previous regression, this portion of the analysis examines each year of a multi-year contract as a separate observation, with statistical measures

taken to cluster standard errors at the player level. For starting pitchers, the performance statistics used for dependent variables include: Games Started, Innings Pitched, FIP, WHIP, WAR, and Earned Runs. For relief pitchers, the statistics used for analysis include: Games Pitched, Games Finished, Innings Pitched, FIP, WAR, gmLI, and Earned Runs. Finally, for hitters, the statistics used for analysis include: Plate Appearances, WAR, OPS, HR%, Hits and Doubles. For the independent variables, three separate analyses are done: the impact of having any type of incentive in a contract on player performance, the impact of having an appearance-based, awards-based or performance-based incentive on player performance, and the impact of having an incentive specifically geared towards a certain statistic on player performance in that category. As alluded to earlier, but explained specifically here, an appearance-based incentive counts any incentive geared towards the following categories for a pitcher: Games Started, Games Pitched, Games Finished (relievers only), Days Active and Innings Pitched. For a hitter, an appearance-based incentive is defined as any incentive geared towards: Plate Appearances, Games Played, Games Started and Days Active. In defining an awards-based incentive, this alludes to any incentive geared towards the following categories for pitchers: Cy-Young, MVP, Gold Glove, Silver Slugger, All-Star, Rolaids Award (relievers only) and Comeback Player of the Year. For hitters, an awards-incentive is defined as any incentive geared towards the following categories: MVP, Gold Glove, Silver Slugger, All-Star, and Comeback Player of the Year. Finally, a performance-based incentive alludes to an incentive geared towards a player's statistical performance, such as the ERA of a pitcher, or the doubles hit by a hitter. Though these are rather uncommon, relative to the other types, this type of incentive is still worth including for analysis. A final point worth noting is that the previous year's value and average value of a

statistic is included in each regression, in order to examine whether these also have an impact on future performance. An example of the analyses done for each statistic is found below:

$$InningsPitched = \beta0+\beta1IncentivesinContract+ \beta2InningsPitchedLastYear+ \beta3AVGIP+\varepsilon$$

$$InningsPitched = \beta0+ \beta1AppInc+ \beta2AwardsInc+ \beta3PerfInc+ \beta4IPLastYear+ \beta5AvgIP+ \varepsilon$$

$$InningsPitched = \beta0+ \beta1InningsPitchedIncentive+ \beta2IPLastYear+ \beta3AVGIP+ \varepsilon$$

In further explaining the final regression written above for a starting pitcher, statistic-specific incentives analyzed include: Games Started and Innings Pitched. For relief pitchers, the statistic-specific incentives used as independent variables include: Games Pitched, Games Finished and Innings Pitched. For hitters, the only statistic-specific incentive examined is Plate Appearance incentives.

7 Results

7.1 Summary Statistics

In analyzing the results from the regressions, it would be prudent to first provide summary statistics on the contract data gathered, to provide some additional context. Table 2 provides the number of free agent contracts signed from 2009 to 2019 gathered. From this table, it is worth noting the consistency in the number of contracts signed from 2013 to 2019, and the small amount of contracts signed from 2009 to 2012 given the aforementioned constraint on gathering data. Further, the offseasons with the most contracts signed were 2017 and 2019, with 108 contracts signed in both periods. In addition to the number of contracts signed in each offseason, Table 3 provides the frequency that each contract length appears in the data. From this table, it is worth noting that contracts of only one year make up more than half of the data and the number of observations for each contract length steadily decreases as the number of years increases. Table 4 provides a breakdown of the number of observations at each position in the data. From this table, it is worth noting the number of pitchers make up more than half of the data, and the

positional player with the most observations is the catcher position (position 2) with 70. Further, there are 177 starting pitchers and 217 relief pitchers (31 pitchers were omitted here due to the start percentage distinction). It is also worth providing some summary statistics on various aspects of the contract variables. Table 5 provides summary statistics on the average contract length, amount, salary, service time of the player when signed, and age for the categories: all positions, hitters, starting pitchers and relief pitchers. Table 5 also provides a breakdown of the prevalence of incentives in general and the different incentive types for the aforementioned four groups, as well as a breakdown of the prevalence of incentives by contract years for each group. From this table, it is worth noting that the average contract length for the entire dataset was roughly 2 years, which is approximately the same for each group. For contracts of greater than one year, the average contract length for all positions, hitters and starting pitchers was over three years, and was roughly 2.4 years for relief pitchers. For the average contract amount, starting pitchers had the highest average of roughly $29 million, while the average for relief pitchers was significantly lower, with an average of roughly $9.9 million. The average for hitters was roughly $26 million and $22.4 million for all positions. For contracts longer than one year, the average amount was roughly $53.7 million and $54.1 million for starting pitchers and hitters, respectively, $43.2 million for all positions and $17.9 million for relief pitchers. For contracts with incentives, the average amount was $19.1 million for all positions, $25.9 million for all hitters, $25.8 million for starting pitchers, and $7,350,240 for relievers. Thus, the data indicates that the average contract amount for relief pitchers was significantly lower than other groups. For AAV, the average AAV for one year contracts (*Average Contract Amount (Years =1)* in Table 5) was $4,581,474 for all positions, $4,558,898 for hitters, $7,078,529 for starters and $2,876,242 for relievers. For all contracts, the mean AAV was $7,331,610 for all positions, $7,793,924 for

hitters, $10.1 million for starting pitchers and $4,722,131 for relief pitchers. For contracts of longer than one year, the mean AAV was $10.6 million for all positions, $11.5 million for all hitters, $13.4 million for starting pitchers and $6,850,533 for relief pitchers. For contracts with incentives, the mean AAV was $6,291,016 for all positions, $6,582,809 for hitters, $9,330,256 for starting pitchers, and $4,109,979 for relievers. Therefore, relievers also seem to consistently have the lowest mean AAV, along with the lowest contract lengths and amount. Finally, for each group, the mean service time when signed is roughly 9 years for each group, and the average age when a player from each group was signed hovers between 32 and 33 years old.

In breaking down the incentives in each contract, it is worth noting that 46% of all contracts have incentives, with 42% of hitter contracts, 46% of starting pitcher contracts, and 52% of relief pitcher contracts having them. In breaking down each incentive type, 57% of incentive contracts had appearance-based incentives, which occurred in 40% of hitter contracts, 56% of starting pitcher contracts, and 74% of relief pitcher contracts. In addition, 36% of all incentive contracts had awards-based incentives, while this occurred in 55% of hitter incentive contracts, 40% of starting pitcher incentive contracts and 13% of relief pitcher incentive contracts. Finally, performance incentives appeared in 7% of all incentive contracts, 5% of hitter incentive contracts, 4% of starter incentive contracts, and 13% of reliever incentive contracts. Therefore, appearance incentives appear to be the most common type of incentives for all positions, as well as starting pitchers and relief pitchers, while awards-based incentives were most prevalent in hitter incentive contracts. It is also worth noting the fact that relief pitchers having the highest percentage of incentives in their contracts, as well as appearance-based incentives making up 74% of incentive-based contracts for relievers, further indicating the sharp contrast in how relief pitchers are treated when signing contracts.

In examining the prevalence of incentives by contract year for each group, it is worth noting from Table 5 that incentives seem to appear most often in shorter-term contracts, which is most evident in the relief pitcher column, given contracts of 5 or more years had no incentives. In addition, perhaps it is worth noting that for each group, contracts of one year in length made up the highest proportion of contracts with incentives. As the contract length increased, the prevalence of incentives seemed to decrease, which may point to long term contracts having more guaranteed money, as opposed to short-term contracts, in which teams may try to maximize production in a shorter time frame by including incentives.

7.2.1 Results from Regressions for Incentives in Contracts: Pitchers

Table 6 provides the regression results for starting pitchers and whether certain player traits are related to incentives being present in a contract. From this table, it is worth noting that only the Innings Pitched Last Year and Average Innings Pitched variables are statistically significant, meaning these are the only variables that could be related to incentives being present in a contract, other than by chance or randomness. Within the table, an increase in the number of asterisks next to a number signifies a higher level of confidence that a variable is positively or negatively related to the outcome variable. While an increase in last year's innings pitched made incentives less likely, an increase in the average innings pitched made an incentive more likely. This may indicate that some recency bias is present, given that teams seem to deter from incentives for pitchers who pitched more last year, despite the opposite effect occurring for their average innings pitched. Therefore, in examining whether poorer player performance, age and major injuries can predict the presence of incentives, the analysis for starting pitchers does not seem to provide much support for the first hypothesis. For relief pitchers, Table 7 provides the logistic regression results for the relationship between incentive clauses and reliever traits. From

this table, it is worth noting the significant results, which include the fact that an increase in ERA last year made a relief pitcher more likely to have an incentive in their contract, while an increase in a reliever's average ERA between two and four seasons ago made a reliever less likely to have an incentive. Further, an increase in a reliever's WAR last year made a reliever less likely to have an incentive in their contract, while an increase in the variance of a reliever's WAR made them less likely to have an incentive in their contract. An increase in a reliever's FIP and WHIP last year, which points to worse performance, also made a reliever more likely to have an incentive. These results seem to indicate that a reliever performing worse in the previous season made it more likely that an incentive was present in their contract. Thus, while this does provide some support for Hypothesis I, and the predictions for the impact of player performance, the predictions made on the impact of a player's age, service time and injury history do not seem to be supported from the relief pitcher results.

7.2.2 Results from Regressions for Incentives in Contracts: Hitters

Table 8 provides the regression results for whether certain hitter attributes point towards incentives being present in a contract. From this table, it is worth noting that an increase in the number of games played last year for a hitter made them more likely to have incentives in their contract. However, this result is not consistent in each iteration of the analysis. In addition, an increase in a hitter's RBIs last year, variance in RBIs, variance in WAR, variance in Home Runs and Plate Appearances last year made a hitter less likely to have an incentive in their contract, while an increase in the variance in games played, average Plate Appearances and variance in Plate Appearances made a player more likely to have an incentive in their contract. Thus, these results indicate that improved performance last year made a hitter less likely to have an incentive in their contract, while an increase in variance for some categories made a player more likely to

have an incentive, but the opposite conclusion was reached for the variance in other statistics. Similar to relief pitchers, there does seem to be support for Hypothesis I that improved player performance made a player less likely to have an incentive; however, there does not seem to be much support for Hypothesis I in regards to the predictor variables based on a player's age, injury history and service time. In breaking this group down into infielders and outfielders, the results yielded are practically the same.

7.3.1 Regression Results for AAV: Pitchers

Table 9 provides the results for the impact of player performance, traits and incentive clauses on a starting pitcher's AAV. From this table, one result worth noting is that an increase in a player's age was negatively associated with a starter's AAV, which aligns with the findings from Krautmann and Oppenheimer. In addition, an increase in a starter's average innings pitched, innings pitched last year, WAR, variance in WHIP and variance in ERA last year were positively associated with AAV, while a decrease in FIP last year, WHIP last year, as well as average ERA and ERA last year were negatively associated with AAV. Thus, these results for starting pitchers again align with Krautmann and Oppenheimer's findings on the relation between player performance and AAV. However, more importantly, incentives being present in a contract do not seem to have a significant impact on a starter's AAV. Though having an incentive present in a contract was positively associated with a starter's AAV, which in itself does not align with Hypothesis II, the coefficient not being statistically significant further indicates a lack of evidence for Hypothesis II, from the perspective of starting pitchers.

For relief pitchers, Table 10 provides the regression results for the impact of performance, player traits and incentives on a reliever's AAV. From this table, it is worth noting that incentives being present in a contract were negatively associated with a player's AAV, which does align with the second hypothesis, and differs from the results from Table 9 for starting

pitchers. In general, a reliever's AAV seems to decrease by roughly $1.3 million by having incentives in their contract, even when controlling for performance. This provides an interesting dynamic, in that relief pitchers are already likely receiving a lower AAV than starting pitchers, and the presence of incentive clauses causes their average salary to fall even further. In addition to the presence of incentive clauses, a reliever's age, variance in Innings Pitched, ERA last year, FIP last year, and average FIP were all negatively associated with a reliever's AAV. In contrast, Innings Pitched in the previous season, the average number of games pitched prior to signing, WAR, average WAR, and variance in a reliever's FIP, were all positively associated with AAV. Therefore, the regression results for relief pitchers, seem to align with the second hypothesis's predictions on the impact of incentives being present in a contract on a player's AAV.

7.3.2 Regression Results for AAV: Hitters

Table 11 provides the regression results for the second hypothesis from the perspective of hitters. From this table, the most important point worth mentioning is that incentives being present in a contract is negatively associated with a hitter's AAV, with a hitter's AAV falling by roughly $1.7 million by an incentive clause being present. This result is akin to the results for the analysis from the reliever's perspective, even when controlling for performance. While the AAV of hitters and relievers were negatively associated with the presence of incentive clauses, starting pitchers did not seem to be impacted in this manner. This provides an interesting dynamic on which groups are negatively impacted by taking on incentive clauses, as opposed to more guaranteed money. Therefore, the regression results for hitters seem to support the predictions from the second hypothesis on the relationship between incentives being present and a player's AAV. In breaking hitters down into infielders and outfielders, similar results are reached. Further, in examining the other statistically significant variables, a hitter's age also seems to be

negatively associated with AAV. From this table, it is also worth mentioning that a hitter's games last year, average games, variance in games, Home Runs last year, RBIs last year, WAR last year, and oWAR last year were positively associated with AAV. This was also the case for a hitter's average oWAR, Plate Appearances last year, average Plate Appearances, batting average last year, mean batting average, as well as OPS last year and a hitter's average OPS. In contrast, the variance in a hitter's Plate Appearances was negatively associated with AAV.

7.4.1 Regression Results for Player Performance: Pitchers

In analyzing the final aspect of this paper, Table 12 provides the regression results for the impact of incentive clauses on player performance, along with the impact of the previous year's performance and a player's average performance. From this table, it is worth noting that the value of the statistic in the previous year, and the average value of the statistic, are practically all significant and positively related to performance in the next year, indicating that improved past performance was associated with improved future performance, and poor performance in the past (as seen from positive FIP and WHIP coefficients) was associated with poor performance in the future. However, for the impact of incentives, virtually none of the results bear statistical significance, with the exception of a Games Started Incentive being negatively associated with future Games Started; however, this result is not very significant, and may be attributed to the type of player targeted for this incentive type. Therefore, minimal support is provided for Hypothesis III, on whether incentive clauses impact future performance.

In analyzing this section of the paper for relief pitchers, Table 13 provides the regression results for the impact of incentives and past performance, on future performance. Similar to starting pitchers, the value of the statistic last year is positively associated with future performance, meaning improved performance in the past is associated with improved future

performance, and vice versa. In addition, the average values for Games Finished, FIP, and WAR are significant and positively associated with future performance, indicating a similar result from starting pitchers, that improved historical performance is associated with positive future performance, and vice versa. In examining the results for the incentive-related variables, any type of incentive being present in a contract did seem to positively impact the number of games a reliever pitched. In addition, an awards-incentive being present was positively associated with a reliever's Games Finished, and WAR, as well as negatively associated with Earned Runs. An appearance-incentive being present was negatively associated with Games Finished, while a performance-incentive being present was positively associated with the number of games pitched, Innings Pitched, WAR and gmLI, and negatively associated with a reliever's FIP. Thus, perhaps one conclusion to draw from these results is that a reliever's game appearances may be negatively associated with the presence of an appearance-incentive, while their performance and appearances are positively associated with the presence of performance and awards-incentives.

7.4.1 Regression Results for Player Performance: Hitters

In examining the final aspect of this paper from the hitters' perspective, Table 14 provides the regression results for the impact of past player performance and incentives on future performance. From this table, a statistic's value in the previous year and its historical average were all positively associated with future performance, which in this context implies that improved past performance was associated with improved future performance. For the incentive variables, it is worth noting that an appearance-incentive was negatively associated with a hitter's HR% and doubles hit, and a plate appearance-specific incentive was negatively associated with a hitter's plate appearances. In contrast, an awards-incentive being present was positively associated with a player's future Plate Appearances, WAR, hits and doubles. These

results may indicate that hitters receiving appearance-based incentives were unable to perform up to their expectations, while players receiving awards-based incentives were able to improve their performance when this incentive type was present. In examining how this relationship was caused, this may be a result of riskier players being given appearance-based incentives and thus not meeting the goals laid out. Another possible cause may be players who received this incentive suffering from a nagging injury during the season, or simply did not put in adequate effort. For awards-incentives, perhaps the players who received these incentives were on an upward trajectory when signing their contract, which made them more likely to win these awards, and therefore targeted for this type of incentive. In other words, given that the statistical data is objective and season-long, there may possible actions occurring during the course of the season which are not adequately captured by the data, and can explain over and under-performance. Therefore, these results provide support for Hypothesis III, while also posing an interesting question of whether certain incentive types are more associated with a certain type of player and their performance. Again, in breaking this group down into infielders and outfielders, the results are rather similar.

8 Conclusion

This paper attempted to expand the agency literature in the context of baseball, by examining the role that incentive clauses play from the perspective of front office acquisitions and player performance. Using data primarily from “Cot’s Baseball Contracts”, “Baseball-Reference.com” and “RotoWire”, this paper attempted to examine three areas: 1) Whether certain character traits typically associated with a risky player made one more likely to have an incentive in their contract 2) Whether a player’s average annual value in their contract was negatively impacted by the presence of an incentive clause 3) Whether certain player statistics were impacted by the presence of incentive clauses. The analysis for this paper was broken up into three groups

observed in the data: starting pitchers, relief pitchers and all hitters. While the results for the first area of this paper did not align with the predicted outcomes in regards to a player's age and injury history, there did seem to be some support in regards to the impact of past player performance on the presence of an incentive clause. For the second section of this paper, regression results did seem to yield the expected outcome on the impact of incentive clauses on a player's AAV, apart from the results for starting pitchers. For the final aspect of this paper, though results for starting pitchers did not yield the expected results, the results for relief pitchers and hitters did provide some support for Hypothesis III, as well as provide an interesting result that appearance-based incentives were associated with worse performance for the players who received them, while awards-based and performance-based incentives were associated with positive player performance. This may introduce a dynamic, in regards to which players are targeted for each type of incentive.

In outlining future areas for research, the time-consuming nature of collecting data by hand, as well as limitations as to how much data could be gathered in the time frame, implies that more data can be gathered, both in terms of player contracts from past free agency periods beyond the sample studied, as well as more advanced metrics for player performance, in order to gather a clearer image of player performance. With this data, one possible area to explore is further individualizing player positions, and examining each aspect of this paper based on a player's position. In addition, the work of Krautmann and Oppenheim could be adapted to examine the relationship between incentive clauses being present and contract length and amount.

9 Tables

Table One: Variables Used

Variable	Description
Age	*Age of a player for the year they are entering*
Position	*Numerical position of a player (1-9)*
Major Injury	*Whether a player has had a major injury*
Offseason Year Contract Signed	*Season the first year of a contract lines up with*
Entering Year When Signed	*Year a player is entering based on service time*
Avoided Arbitration	*Whether a player has gone to arbitration negotiations*
Contract Years	*Number of years a contract lasts*
Contract Amount	*Total amount of a contract*
AAV	*Average annual salary for a given contract*
Incentives in Contract	*Whether a contract has incentives*
Incentive Type	*Whether an incentive is a performance-based, appearance-based or awards-based incentive*
Incentive Amount	*Amount each incentive clause is worth*
Games	*Number of games a hitter plays*
Plate Appearances(PA)	*Number of times a hitter appears in the batter's box*
Average	*Hits divided by plate appearances*
OPS	*On-Base percentage of a player plus their slugging percentage. Measures a player's ability to hit for contact and power*
WAR	*How many wins a player contributes to a team compared to the next available replacement*
oWAR	*How many wins a player contributes to a team compared to the next available replacement on offense*
Hits	*Total number of hits a player has in a season*
HRs	*Number of home runs a player hits in a season*
HR%	*Home runs divided by Plate Appearances*
Top 5 MVP	*Whether a player placed top 5 in MVP voting*
Gold Glove	*Whether a player received a Gold Glove*
Silver Slugger	*Whether a player received a Silver Slugger*
LCS/WS MVP	*Whether a player won a Playoff MVP award*
All Star	*Whether a player was voted as an All-Star*
Games Pitched	*Number of games a pitcher pitched*
Games Started	*Number of games started by a pitcher*
Games Finished	*Number of games finished by a pitcher*
ERA	*Average amount of earned runs a pitcher gives up*
Innings Pitched	*Number of Innings a pitcher pitches*
Hits(Pitcher)	*Number of hits given up by a pitcher*
Earned Runs	*Number of runs given up which a pitcher is solely responsible for*
FIP	*Measures a pitcher's ability to cause an out by a strikeout and prevent walks, home runs and hits*
WHIP	*Number of walks and hits a pitcher gives up divided by the innings they pitch*

WAR(Pitcher)	*Number of wins a pitcher contributes to a team above the next replacement player*
Cy-Young Top 5	*Whether a pitcher placed in the top 5 of Cy Young voting*
MVP Top 5 (Pitcher)	*Whether a pitcher placed in the top 5 of MVP voting*
Gold Glove (Pitcher)	*Whether a pitcher was awarded a Gold Glove*
Silver Slugger(Pitcher)	*Whether a pitcher was awarded a Silver Slugger*
All-Star (Pitcher)	*Whether a pitcher was voted an All-Star*

Table Two: Number of Contracts Signed by Year

Year Contract Signed	Number of Observations
2009	4
2010	9
2011	15
2012	22
2013	104
2014	107
2015	89
2016	102
2017	108
2018	98
2019	108
Total	766

Table Three: Number of Observations by Contract Years

Contract Years	Number of Observations
1	411
2	184
3	71
4	40
5	26
6	10
7	11
8	6
9	1
10	4
12	1
13	1
Total	766

Table Four: Number of Observations by Position (with Start Percentage Condition for Pitchers)

Position	Number of Observations
1: Starting Pitchers	177
1: Relief Pitchers	217
2: Catchers	70
3: 1B	58
4: 2B	40
5: 3B	31
6: SS	29
7: LF	36
8: CF	29
9: RF	48
Total	735

Table Five: Summary Statistics for Contract Details (with Start Percentage Condition for Pitchers)

Variable	All Positions	Hitters	Starting Pitchers	Relief Pitchers
Observations	735	341	177	217
Average Contract Years	2.011	2.213	2.126	1.66
Average Contract Years (Years>1)	3.195	3.593	3.38	2.418
Average Contract Years (Incentives)	1.842	2.119	1.939	1.504
Average Contract Amount (millions of dollars)	22.4	27.6	29.3	9.838
Avg. Contract Amount (Years>1) (millions of dollars)	43.2	53.7	54.1	17.9
Avg. Contract Amount (Years =1) (millions of dollars)	4.581	4.558	7.078	2.876
Avg. Contract Amount (Incentives) (millions of dollars)	19.1	25.9	25.8	7.35
Mean AAV (millions of dollars)	7.331	7.793	10.1	4.722
Mean AAV (Years > 1) (millions of dollars)	10.6	11.5	13.4	6.85
Mean AAV (Incentives) (millions of dollars)	6.291	6.582	9.93	4.109
Average Service Time	8.92	9.055	9.1	8.611
Average Age	32.63	32.51	32.34	33.038
Incentives Breakdown (percentage)				
Incentives in Contract	46%	42%	46%	52%
Appearance Incentive	57%	40%	56%	74%
Awards Incentive	36%	55%	40%	13%
Performance Incentive	7%	5%	4%	13%
Incentive Breakdown by Contract Year				
1 year	39.86%	36%	37.78%	44.64%
2 years	19.94%	14.55%	16.30%	32.14%
3-4 years	19.08%	17.54%	17.78%	23.21%
5+ years	21.10%	32.09%	28.15%	0%

Table 6: Regression Results for Incentives in Contracts for Starting Pitchers

Incentives in Contract	(1)	(2)	(3)	(4)	(5)
VARIABLES					
Age	-0.069	-0.059	-0.064	-0.071	-0.066
	(0.073)	(0.077)	(0.079)	(0.075)	(0.077)
Major Injury	0.585	0.479	0.559	0.604	0.445
	(0.444)	(0.435)	(0.438)	(0.409)	(0.454)
Service Time	-0.062	-0.069	-0.073	-0.067	-0.047
	(0.098)	(0.100)	(0.102)	(0.094)	(0.102)
Innings Pitched Last Year	-0.014***	-0.016***	-0.016***	-0.016***	-0.015***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Average IP	0.010*	0.009	0.011*	0.011*	0.009
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Variance IP	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
WHIP Last Year		-0.044			
		(0.774)			
Average WHIP Last Three Years		0.457			
		(1.294)			
Variance WHIP Last Three Years		-5.117			
		(4.150)			
FIP Last Year			-0.349		
			(0.307)		
Average FIP Last Three Years			-0.035		
			(0.319)		
Variance FIP Last Three Years			0.057		
			(0.324)		
WAR Last Year				0.082	
				(0.119)	
Average WAR				-0.037	
				(0.171)	
Variance WAR				0.028	
				(0.134)	
ERA Last Year					-0.028
					(0.139)
Average ERA Last Three Years					-0.036
					(0.200)
Variance ERA Last Three Years					-0.024
					(0.035)
Constant	2.848	2.755	4.531**	2.998	3.404
	(1.951)	(3.131)	(2.305)	(1.999)	(2.492)
Observations	140	139	140	140	140
Robust standard errors in parentheses	*** p<0.01,	** p<0.05,	* p<0.1		

Table 7: Regression Results for Incentives in Contract for Relief Pitchers

Incentives in Contract	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	n = 182	n = 182	n = 182	n = 182	n = 182	n = 182
Age	-0.097	-0.110	-0.109	-0.096	-0.089	-0.090
	(0.072)	(0.071)	(0.074)	(0.073)	(0.071)	(0.072)
Major Injury	0.340	0.530	0.368	0.269	0.372	0.446
	(0.359)	(0.400)	(0.364)	(0.365)	(0.370)	(0.366)
Service Time	-0.050	-0.049	-0.047	-0.058	-0.037	-0.045
	(0.090)	(0.093)	(0.090)	(0.092)	(0.088)	(0.090)
Innings Pitched Last Year	-0.011	-0.009	-0.012	0.003	-0.011	-0.010
	(0.008)	(0.010)	(0.008)	(0.008)	(0.008)	(0.008)
Average IP	0.006	0.003	0.004	-0.006	0.000	0.003
	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)
Variance IP	0.000	0.001	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Games Pitcher Last Year		0.001				
		(0.015)				
Avg Games Pitcher		0.019				
		(0.013)				
Var Games Pitcher		-0.001				
		(0.001)				
ERA Last Year			0.238**			
			(0.116)			
Average ERA Last Three Years			-0.220**			
			(0.099)			
Variance ERA Last Three Years			-0.127			
			(0.098)			
WAR Last Year				-0.727***		
				(0.199)		
Average WAR				0.398		
				(0.262)		
Variance WAR				-0.438*		
				(0.249)		
FIP Last Year					0.436**	
					(0.175)	
Average FIP Last Three Years					-0.121	
					(0.236)	
Variance FIP Last Three Years					-0.412	
					(0.266)	
WHIP Last Year						1.365**
						(0.637)
Average WHIP Last Three Years						-0.799
						(0.739)
Variance WHIP Last Three Years						1.396
						(3.381)
Constant	3.831*	3.109	4.435**	4.257**	2.793	2.908
	(2.076)	(2.298)	(2.219)	(2.131)	(2.284)	(2.358)
Robust standard errors in parentheses	*** p<0.01	** p<0.05	* p<0.1			

Table 8: Regression Results for Incentives in Contract for All Hitters

Incentives in Contract	(1)	(2)	(3)	(4)	(5)
VARIABLES	n=335	n=330	n=330	n=330	n=330
Age	0.004	0.021	0.012	-0.001	-0.013
	(-0.058)	(-0.06)	(-0.062)	(-0.063)	(-0.064)
Major Injury	0.214	0.233	0.258	0.213	0.21
	(-0.216)	(-0.222)	(-0.235)	(-0.235)	(-0.236)
Service Time	0.034	0.02	0.035	0.032	0.042
	(-0.06)	(-0.061)	(-0.07)	(-0.07)	(-0.071)
Games Last Year	0.001	0.006	0.012*	0.005	0.004
	(-0.004)	(-0.005)	(-0.007)	(-0.005)	(-0.005)
Avg. Games Last 3 Yrs.	0	-0.003	-0.011	0	-0.001
	(-0.005)	(-0.006)	(-0.008)	(-0.006)	(-0.006)
Var Games Last 3 Years	0	0.000*	0.001	0	0
	(0)	(0)	(0)	(0)	(0)
Home Runs Last Year		-0.019			
		(-0.021)			
Average HRs Last 3 Yrs.		0.021			
		(-0.021)			
Var. HRs Last 3 Years		-0.009**			
		(-0.005)			
RBIs Last Year			-0.021**		
			(-0.009)		
Avg. RBIs Last 3 Years			0.022*		
			(-0.011)		
Var. RBIs Last 3 Years			-0.001*		
			(-0.001)		
WAR Last Year				-0.142	
				(-0.092)	
Avg. WAR Last 3 Years				0.076	
				(-0.113)	
Var. WAR Last 3 Years				-0.222**	
				(-0.103)	
oWAR Last Year					-0.086
					(-0.097)
Avg. oWAR Last 3 Yrs.					0.057
					(-0.123)
Var. oWAR Last 3 Years					-0.122
					(-0.111)
dWAR Last Year					-0.273
					(-0.186)
Avg. dWAR Last 3 Yrs.					0.145
					(-0.201)
Constant	-1.004	-1.643	-1.382	-1.035	-0.517
	(-1.796)	(-1.868)	(-1.818)	(-1.852)	(-1.898)
Robust standard errors in parentheses	***p<0.01	**p<0.05	* p<0.1		

Table 8 (cont.): Regression Results for Incentives in Contract for All Hitters

Incentives in Contract **VARIABLES**	(1) n=335	(2) n=330	(3) n=330	(4) n=330	(5) n=330	(6) n=330	(7) n=330	(8) n=330
Var. dWAR Last 3 Years					-0.574			
					(-0.428)			
Plate App. Last Year						-.007***		
						(-0.003)		
Average PA Last 3 Yrs						0.006*		
						(-0.003)		
Var. PA Last 3 Years						0.000*		
						(0)		
AVG Last Year							-2.62	
							(-3.833)	
Average AVG Last 3 Yrs							0.888	
							(-5.198)	
Var. AVG Last 3 Years							67.765	
							(-141.89)	
OPS Last Year								-1.819
								(-1.251)
Avg. OPS Last 3 Years								1.401
								(-1.679)
Variance OPS								-2.414
								(-13.557)
Constant	-1.004	-1.643	-1.382	-1.035	-0.517	-0.854	-0.773	-0.482
	(-1.796)	(-1.868)	(-1.818)	(-1.852)	(-1.898)	(-1.807)	(-2.054)	(-2.057)
Robust standard errors in parentheses	***p<0.01	**p<0.05	* p<0.1					

Table 9: Regression Results for AAV of Starting Pitchers

AAV(millions)	(1)	(2)	(3)	(4)	(5)
VARIABLES	n=140	n=140	n=140	n=140	n=140
Incentives in Contract	1.143	1.791	-0.062	0.6	1.359
	(-2.646)	(-2.728)	(-2.037)	(-2.413)	(-2.679)
Age	-0.51	-0.927**	-0.211	-0.529*	-0.774**
	(-0.327)	(-0.376)	(-0.206)	(-0.293)	(-0.326)
Major Injury	2.365	3.494	1.842	3.329	3.456
	(-2.415)	(-2.347)	(-1.785)	(-2.289)	(-2.606)
Service Time	-0.139	0.039	-0.473	-0.251	-0.103
	(-0.286)	(-0.214)	(-0.344)	(-0.274)	(-0.262)
Average IP	0.011	0.027**	0.018	0.005	0.018
	(-0.022)	(-0.013)	(-0.015)	(-0.015)	(-0.017)
IP Last Year	0.100***	0.086**	0.087***	0.047*	0.089**
	(-0.036)	(-0.034)	(-0.032)	(-0.024)	(-0.038)
Variance IP	0.001	0.001*	0	0	0.001
	(0)	(0)	(0)	(0)	(0)
WHIP Last Year		-18.341***			
		(-6.4960			
Avg. WHIP Last 3 Yrs		-7.895			
		(-5.462)			
Var WHIP Last 3 Years		43.699*			
		(-22.019)			
FIP Last Year			-7.850*		
			(-3.961)		
Avg. FIP Last 3 Years			-0.168		
			(-3.1)		
Var FIP Last 3 Years			7.546		
			(-4.704)		
WAR Last Year				2.309***	
				(-0.539)	
Average WAR				0.74	
				(-0.751)	
Variance WAR				0.062	
				(-0.382)	
Avg. ERA Last 3 Years					-1.595***
					(-0.487)
ERA Last Year					-2.280***
					(-0.553)
Var. ERA Last 3 Years					0.489***
					(-0.11)
Constant	9.319	53.045***	35.929***	14.668**	32.768***
	(-6.3)	(-12.713)	(-7.975)	(-6.346)	(-8.551)
R-Squared	.195	.303	.386	.298	.268
Robust standard errors in parentheses	*** p<0.01	** p<0.05	* p<0.1		

Table 10: Regression Results for AAV of Relief Pitchers

AAV (millions)	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
Incentives in Contract	-1.451***	-1.635***	-1.268**	-0.925**	-1.027***	-1.345**
	(0.540)	(0.546)	(0.545)	(0.374)	(0.382)	(0.540)
Age	-0.229	-0.287*	-0.222	-0.342***	-0.275***	-0.244*
	(0.141)	(0.153)	(0.139)	(0.074)	(0.081)	(0.141)
Major Injury	0.156	0.844	0.048	0.084	0.421	0.041
	(0.559)	(0.576)	(0.558)	(0.373)	(0.391)	(0.560)
Service Time	0.029	0.059	0.019	0.132	0.013	0.035
	(0.165)	(0.178)	(0.165)	(0.093)	(0.113)	(0.167)
Average IP	-0.011	-0.007	-0.007	-0.023**	-0.006	-0.009
	(0.010)	(0.013)	(0.010)	(0.010)	(0.011)	(0.011)
Innings Pitched Last Year	0.019*	0.018	0.021**	0.015	0.042***	0.020**
	(0.010)	(0.014)	(0.010)	(0.010)	(0.011)	(0.010)
Variance IP	-0.001*	0.000	-0.001*	0.000	0.000	-0.001*
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)
Games Pitcher Last Year		0.029				
		(0.018)				
Avg Games Pitcher		0.055***				
		(0.021)				
Var Games Pitcher		0.001				
		(0.001)				
ERA Last Year			-0.359**			
			(0.145)			
Avg. ERA Last Three Years			0.141			
			(0.140)			
Var. ERA Last Three Years			0.290*			
			(0.163)			
WAR Last Year				1.643***		
				(0.211)		
Average WAR				2.461***		
				(0.358)		
Variance WAR				0.233		
				(0.205)		
FIP Last Year					-1.544***	
					(0.219)	
Average FIP Last Three Years					-2.576***	
					(0.373)	
Variance FIP Last Three Years					0.523*	
					(0.285)	
WHIP Last Year						-0.907
						(0.906)
Average WHIP Last Three Years						0.254
						(1.260)
Variance WHIP Last Three Years						1.607
						(5.067)
Constant	12.740***	8.935*	12.692***	12.525***	26.576***	13.766***
	(4.397)	(4.901)	(4.390)	(2.174)	(2.870)	(4.764)
Observations	182	182	182	182	182	182
R-squared	0.117	0.173	0.149	0.571	0.546	0.129
Robust standard errors in parentheses	*** p<0.01	** p<0.05	* p<0.1			

Table 11: Regression Results for AAV of All Hitters

AAV (millions) **VARIABLES**	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Incentives in Contract	-2.007***	-1.713***	-1.698***	-1.4***	-1.598***	-1.532***	-1.832***	-1.779***
	(0.580)	(0.518)	(0.502)	(0.414)	(0.401)	(0.539)	(0.529)	(0.448)
Age	-0.755***	-0.675***	-0.526***	-0.34***	-0.301***	-0.499***	-0.692***	-0.606***
	(0.198)	(0.166)	(0.134)	(0.112)	(0.110)	(0.175)	(0.190)	(0.153)
Major Injury	0.491	0.269	0.100	0.012	-0.060	-0.263	0.029	-0.114
	(0.672)	(0.589)	(0.508)	(0.420)	(0.409)	(0.582)	(0.621)	(0.546)
Service Time	0.335	0.282	0.022	0.152	0.009	0.121	0.167	0.152
	(0.231)	(0.191)	(0.152)	(0.125)	(0.122)	(0.219)	(0.228)	(0.188)
Games Last Year	0.084***	0.043***	0.014	0.023**	0.016*	-0.062***	0.061***	0.046***
	(0.011)	(0.012)	(0.015)	(0.009)	(0.009)	(0.023)	(0.010)	(0.009)
Average Games Last Three Yrs.	0.035***	0.006	-0.046***	-0.006	-0.013	-0.091**	0.010	-0.004
	(0.013)	(0.015)	(0.017)	(0.010)	(0.011)	(0.037)	(0.014)	(0.013)
Variance Games Last Three Yrs.	0.002***	0.002**	0.001**	0.001*	0.001**	0.002***	0.002**	0.001*
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
HRs Last Year		0.221***						
		(0.059)						
Avg. HRs Last Three Years		0.153**						
		(0.066)						
Var. HRs. Last Three Years		-0.012						
		(0.013)						
RBIs Last Year			0.097***					
			(0.020)					
Average RBIs Last Three Years			0.128***					
			(0.024)					
Variance RBIs Last Three Years			0.000					
			(0.001)					
WAR Last Year				1.547***				
				(0.154)				
Average WAR Last Three Years				1.751***				
				(0.194)				
Variance WAR Last Three Years				0.080				
				(0.168)				
oWAR Last Year					1.870***			
					(0.164)			
Average oWAR Last Three Yrs.					1.899***			
					(0.209)			
Variance oWAR Last Three Yrs.					-0.006			
					(0.183)			
dWAR Last Year					0.300			
					(0.307)			
Average dWAR Last Three Yrs.					-0.368			
					(0.340)			
Observations	330	330	330	330	327	330	330	330
R-squared	.335	.523	.576	.711	0.734	0.500	0.482	0.622

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11(cont.): Regression Results for AAV of All Hitters

AAV (millions)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES								
Variance dWAR Last Three Yrs.					0.612			
					(0.707)			
Plate App. Last Year						0.030***		
						(0.005)		
Average PA						0.025***		
						(0.008)		
Variance PA						-0.000***		
						(0.000)		
AVG Last Year							44.125***	
							(9.112)	
Average AVG Last Three Years							65.015***	
							(12.824)	
Variance AVG Last Three Years							358.931	
							(320.823)	
OPS Last Year								20.010***
								(2.923)
Average OPS Last Three Years								31.648***
								(3.753)
Variance OPS								47.144
								(39.825)
Constant					10.273***	16.561***	-7.709	-17.02***
					(3.292)	(4.797)	(6.151)	(5.457)
Observations					327	330	330	330
R-squared					0.734	0.500	0.482	0.622

Robust standard errors in parentheses

Table 12: Regression Results for Appearance Outcomes for Starting Pitchers

VARIABLES	(1) Games Started	(2) Games Started	(3) Games Started	(4) Innings Pitched	(5) Innings Pitched	(6) Innings Pitched
Statistic Last Year	0.308***	0.299***	0.278***	0.359***	0.343***	0.358***
	(0.079)	(0.080)	(0.079)	(0.071)	(0.068)	(0.071)
Average Last 3 Years of Statistic	0.283**	0.283**	0.291**	0.232***	0.221***	0.244***
	(0.112)	(0.116)	(0.112)	(0.077)	(0.079)	(0.077)
Incentives in Contract	0.276			6.859		
	(1.036)			(6.189)	1.138	
Appearance Incentive Pitcher		-0.247			(7.274)	`
		(1.260)				
Awards Incentive Pitcher		0.949			10.968	
		(1.285)			(8.630)	
Performance Incentive Pitcher		0.686			3.581	
		(3.738)			(24.058)	
Games Started Incentive			-3.009*			
			(1.808)			
Innings Pitched Incentive						9.209
						(7.477)
Constant	9.715***	9.961***	10.753***	50.431***	55.719***	50.309***
	(3.208)	(3.452)	(3.239)	(12.229)	(12.350)	(12.608)
Observations	248	249	249	248	249	249
R-squared	0.206	0.209	0.217	0.207	0.211	0.209

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12(cont.): Regression Results for Performance Outcomes for Starting Pitchers

VARIABLES	(7) FIP	(8) FIP	(9) WHIP	(10) WHIP	(11) WARP	(12) WARP	(13) Earned Runs	(14) Earned Runs
Statistic Last Year	0.500***	0.495***	0.467***	0.451***	0.443***	0.423***	0.197***	0.200***
	(0.129)	(0.135)	(0.086)	(0.088)	(0.065)	(0.066)	(0.072)	(0.075)
Avg. Last 3 Yrs. of Stat	0.313***	0.289***	0.189*	0.148	0.206**	0.136	0.367***	0.361***
	(0.111)	(0.102)	(0.097)	(0.093)	(0.085)	(0.088)	(0.083)	(0.084)
Incentives in Contract	-0.074		-0.025		0.211		1.501	
	(0.141)		(0.033)		(0.246)		(3.138)	
App. Incentive Pitcher		-0.012		0.007		-0.376		2.425
		(0.181)		(0.045)		(0.279)		(4.009)
Awards Incentive Pitcher		-0.142		-0.050		0.717		1.837
		(0.168)		(0.036)		(0.435)		(3.830)
Perf. Incentive Pitcher		0.059		0.053		0.499		-0.814
		(0.495)		(0.148)		(0.778)		(9.697)
Constant	1.225**	1.329**	0.502***	0.567***	0.237	0.483**	27.853***	27.772***
	(0.543)	(0.597)	(0.156)	(0.151)	(0.223)	(0.222)	(6.314)	(6.464)
Observations	248	249	247	248	248	249	248	249
R-squared	0.210	0.213	0.178	0.184	0.293	0.310	0.140	0.139
Robust standard errors	***	**						
in parentheses	p<0.01	p<0.05	* p<0.1					

Table 13: Regression Results for Appearance Stats for Relief Pitchers

VARIABLES	(1) Games Pitched	(2) Games Pitched	(3) Games Pitched	(4) Games Finished	(5) Games Finished	(6) Games Finished	(7) Innings Pitched	(8) Innings Pitched	(9) Innings Pitched
Statistic Last Year	0.243***	0.248***	0.236***	0.450***	0.440***	0.454***	0.293***	0.286***	0.288***
	(0.0640)	(0.0652)	(0.0650)	(0.0692)	(0.0633)	(0.0687)	(0.0649)	(0.0654)	(0.0656)
Avg. Statistic Last 3 Years	0.0528	0.0517	0.0555	0.166**	0.161**	0.169**	-0.0206	-0.0194	-0.0171
	(0.0687)	(0.0679)	(0.0694)	(0.0800)	(0.0792)	(0.0798)	(0.0643)	(0.0668)	(0.0650)
Incentives in Contract	3.653*			-0.327			3.122		
	(2.147)			(1.544)			(2.297)		
App. Incentive Pitcher		2.353			-2.856**			-0.342	
		(2.225)			(1.435)			(2.427)	
Awards Incentive Pitcher		1.738			9.928*			7.983	
		(5.108)			(5.155)			(5.241)	
Perf. Incentive Pitcher		11.04**			4.873			12.69***	
		(4.706)			(3.514)			(4.693)	
Games Pitched Incentive			-2.428						
			(3.005)						
Games Finished Incentive						-1.978			
						(1.935)			
Innings Pitched Incentive									-7.556
									(8.466)
Constant	32.58***	32.47***	35.13***	5.046***	5.472***	5.190***	30.71***	31.51***	32.52***
	(5.006)	(4.890)	(5.072)	(1.291)	(1.264)	(1.161)	(4.220)	(4.317)	(4.305)
Observations	309	309	309	286	286	286	283	283	283
R-squared	0.060	0.070	0.054	0.372	0.406	0.374	0.097	0.119	0.095
Robust standard errors in parentheses	***p<0.01	**p<0.05	* p<0.1						

Table 13(cont.): Regression Results for Outcome Stats for Relief Pitchers

VARIABLES	(10) FIP	(11) FIP	(12) WARP	(13) WARP	(14) gmLI	(15) gmLI	(16) Earned Runs	(17) Earned Runs
Statistic Last Year	0.185**	0.199**	0.120	0.113	0.226***	0.226***	0.261***	0.263***
	(0.0851)	(0.0840)	(0.0814)	(0.0817)	(0.0573)	(0.0577)	(0.0773)	(0.0771)
Avg. Statistic Last 3 Years	0.406***	0.392***	0.223**	0.194**	0.317***	0.334***	0.0228	0.0210
	(0.103)	(0.105)	(0.0885)	(0.0823)	(0.0854)	(0.0860)	(0.0655)	(0.0659)
Incentives in Contract	0.0639		0.0823		0.0603		1.287	
	(0.166)		(0.119)		(0.0752)		(1.102)	
App. Incentive Pitcher		0.214		-0.123		-0.0452		1.224
		(0.166)		(0.122)		(0.0697)		(1.169)
Awards Incentive Pitcher		-0.416		0.841***		0.0600		-1.993*
		(0.351)		(0.289)		(0.114)		(1.113)
Perf. Incentive Pitcher		-.849***		0.716***		0.579***		-0.223
		(0.240)		(0.184)		(0.212)		(2.529)
Constant	1.975***	1.993***	0.0708	0.107	0.577***	0.562***	13.64***	13.92***
	(0.383)	(0.395)	(0.107)	(0.0978)	(0.150)	(0.151)	(1.631)	(1.637)
Observations	283	283	283	283	258	258	283	283
R-squared	0.069	0.099	0.049	0.117	0.119	0.170	0.126	0.127

Robust standard errors in parentheses

*** p<0.01 ** p<0.05 * p<0.1

Table 14: Regression Results Appearance and Outcome Stats for All Hitters

VARIABLES	(1) Plate Appearances	(2) Plate Appearances	(3) Plate Appearances	(4) WAR	(5) WAR	(6) OPS	(7) OPS
Statistic Last Year	0.272**	0.251**	0.262**	0.355***	0.347***	0.369***	0.365***
	(0.119)	(0.109)	(0.119)	(0.042)	(0.042)	(0.064)	(0.065)
Avg. Stat. Last Three	0.496***	0.461***	0.493***	0.333***	0.316***	0.455***	0.439***
	(0.077)	(0.077)	(0.077)	(0.047)	(0.048)	(0.079)	(0.080)
Incentives in Contract	18.175			0.177		0.006	
	(17.738)			(0.122)		(0.009)	
App. Incentive Hitter		-13.268			0.008		-0.003
		(24.906)			(0.133)		(0.013)
Awards Incentive Hitter		44.075**			0.309*		0.010
		(17.821)			(0.173)		(0.011)
Perf. Incentive Hitter		-18.445			0.118		-0.010
		(41.742)			(0.322)		(0.028)
Plate App Incentive			-52.619***				
			(19.884)				
Constant	36.791	65.925**	59.189*	-0.273***	-0.219**	0.093*	0.109**
	(28.488)	(27.128)	(33.684)	(0.099)	(0.101)	(0.047)	(0.049)
Observations	585	586	586	585	586	585	586
R-squared	0.234	0.239	0.239	0.334	0.337	0.260	0.261
Robust standard errors in parentheses	*** p<0.01	** p<0.05	* p<0.1				

Table 14(cont.): Regression Results Appearance and Outcome Stats for All Hitters

VARIABLES	(8) HR	(9) HR	(10) Hits	(11) Hits	(12) Doubles	(13) Doubles
Statistic Last Year	0.004***	0.004***	0.438***	0.406***	0.356***	0.328***
	(0.000)	(0.000)	(0.050)	(0.051)	(0.048)	(0.047)
Avg. Stat. Last Three Yrs.	0.404***	0.393***	0.398***	0.374***	0.415***	0.376***
	(0.059)	(0.060)	(0.053)	(0.054)	(0.051)	(0.054)
Incentives in Contract	-0.001		2.478		0.596	
	(0.001)		(3.025)		(0.729)	
App. Incentive Hitter		-0.002*		-6.058		-1.769*
		(0.001)		(3.904)		(0.941)
Awards Incentive Hitter		0.000		9.683**		2.378**
		(0.001)		(4.259)		(0.948)
Perf. Incentive Hitter		-0.003		2.909		0.563
		(0.004)		(9.646)		(2.270)
Constant	0.006***	0.006***	-0.692	5.870	0.841	2.492**
	(0.002)	(0.002)	(3.893)	(4.468)	(0.914)	(1.027)
Observations	585	586	585	586	585	586
R-squared	0.410	0.413	0.416	0.423	0.347	0.359
Robust standard errors in parentheses	*** p<0.01	** p<0.05	* p<0.1			

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