

Understanding the Free Agent Market

To better understand the free agent market, I began by identifying and gathering data for the 600 players that signed free agent contracts from 2003 through 2008.¹ In addition to contract information, I captured their performance statistics for the several years preceding their free agency, their age, position, team they last played for, the team that signed their new contract, and many other data that had the possibility of impacting the terms of their free agent agreements. In an effort to be thorough in my approach, I used regression analysis to test dozens of possible combinations of variables that measure a player's performance as predictors of contract value and length. Did player's contracts depend more on the most recent season, career statistics, or their best season? I also asked if a premium was paid for certain positions and whether age impacted contract length more than it affected average annual value.

In addition to the most fundamental drivers of a player's free agent value, I considered what some might call "halo factors"—things that are more likely to influence the perception of a player, rather than his true underlying worth, but nonetheless still impact the terms of his agreement. I thought back to the seven-year, \$119 million deal that Carlos Beltran signed in January of 2005 and wondered if his prolific postseason with the Astros (.435 average with 8 homers in just 46 at bats) contributed to his lucrative contract. Another factor that some would put in the "halo" category is a player's marquee value. The rationale is that teams are willing to pay more for high profile "stars" that can be box office draws to either help sell team merchandise or simply elevate the overall profile of the team brand. In an effort to measure this effect, I created a proprietary metric of a player's popularity and notoriety, based on the awards a player has won,

the All-Star teams to which he was voted, and several other components. The final halo factor I included in the model has the least to do with the player's onfield performance or even his fan appeal—the agent who represents him at the bargaining table. More specifically, I tested for a potential impact of super-agent Scott Boras. Does a player sign a higher value, or longer term contract, simply because he employs Boras as his representative?

Beyond the individual traits of the players in each year's free agent market, there may also be a broader dynamic at work. What if the market was flooded with middle infielders in a particular year, or there was a dearth of relief pitching? How would the abundance or scarcity of players at any one position impact pricing and contract length in the market? In an effort to answer these questions, I tested an "abundance" or "scarcity" aspect.

THE FREE AGENT MARKET MODEL

After testing my various hypotheses as to what drove free agent salaries and the overall behavior of the market, I settled on separate models for pitchers and position players, recognizing some clear differences in the relative importance of key factors.²

For both pitchers and position players, their previous year's performance did not fully capture the valuations reflected in the market. Instead, a combination of last year's performance and the player's best recent season (within the last four years) represented the combination of performance metrics that best explained a player's free agent contract. This implies that when a player has a so-so year leading into free agency, he is not fully penalized for it, particularly if he had a stellar

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Mark Teixeira may be more valuable in monetary terms to the Yankees than he would have been to the Red Sox.

season recently. Call it a sense of optimism or some other factor, but the market seems to imply that one weak season—even if it's the most recent one—does not destroy a player's value. Age is also an important factor in determining free agent value—the older player is at a clear disadvantage—although age's impact is greater on contract length than the average annual value (AAV). Although it is difficult to assess, a player's risk of injury is a major consideration in free agent contracts. In an attempt to capture its impact I used the year-to-year variation in the number of games played as a proxy for a player's durability. The variable helped explain the player-to-player variation in both the AAV and length of players' contracts.

Another interesting finding of the analysis is that Scott Boras generates higher value and a longer contract for his clients, after adjusting for the quality of the player, age, durability, and other factors, with a greater impact for pitchers over position players. As an example, last November pitcher Kyle Lohse signed a 4-year, \$10.25 million per year deal with the Cardinals—think of it

as \$9 million for Lohse's right arm and \$1.25 million due to his crafty agent. Another factor that seems to catch the attention of suitors and their checkbooks is a player that delivers a monster post-season performance.

The pitchers and position players models have some unique variables that drive the terms of their contract. In the pitchers model, fastball velocity has an impact on contract value, even after adjusting for performance, age, durability, and all other factors. The model says that if A.J. Burnett had the same performance stats, but an 88 mph fastball rather than his 94 mph fastball, he would have earned \$1 million per year less in this year's free agent market. Left-handed

pitchers and starting pitchers also receive premiums over righthanders and relievers.

In the position players model, certain positions carry a premium or discount. For the same level of performance, age, and durability, first basemen and designated hitters are paid at a discount and outfielders are paid a slight premium. Other factors that can contribute to a player's contract value are his home run rate and his defensive reputation. Despite the flood of new defensive metrics available, Gold Glove awards have the strongest connection to a free agent's contract, despite the award's questionable reputation for selecting the premier defenders.

ENDNOTES

¹ With the help of Clifford Dank, Michael Pearce, Damon Levy, and Brendan Reddy, while MBA students at University of California-Berkeley.

² Also, there were separate models for average annual value and contract length, leading to a total of four models.

—Vince Gennaro