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Measuring shirking in baseball players

**Abstract**

The following study looks at the shirking problem that appears in long-term sports contracts. The issue of shirking appears when a player has incentive to perform above expectations for a time period in order to secure a long-term contract, after which the player’s performance will return to normal or fall below expectations. Our paper focuses on major league baseball. We look at the free agent players that were on a contract year in 2016. A regression is ran to find the effect of the length of contract on players displaying shirking behavior. Shirking behavior is assumed when the players actual performance falls below expected performance.

**Introduction**

Any employer that offers long-term contracts comes across the issue of their employees acting opportunistically. Employees are paid to for the effort that is put into their work. However, it is difficult to directly measure an employees effort. Due to this, employees can find opportunities to put less effort into their work and be paid the same amount. In competitive sports there are statistics recorded for every player. These statistics can be used to measure the productivity or effort of the player. This gives econometricians the opportunity to relate the

effect of having a long-term contacts to the amount of effort a player gives.

This is important as it allows econometricians to test if the contract year phenomenon happens in major league baseball. This phenomenon occurs when players outperform expectations near the end of their current contract year and then under perform following the signing of a new contract. Players have the incentive to do so because contracts guarantee them a salary for a set time period, regardless of performance during that same time. Thus, players would perform better near the end of their contract year to increase their chances of signing a new longer term contract. Once a player has obtained a new long-term contract, they no longer have incentive to outperform expectations. The player will then perform at their expected contribution or even fall below expectations. When a player performs below expectations right after signing a contract, that player is considered to be shirking.

However, there can be consequences for players displaying shirking behavior. An individual who becomes known for shirking will be less likely to get signed. We use the available sports data to measure which players were shirking before and after their contract year. We use a regression analysis to measure how much of an effect the new contract year length has on the probability that the player will shirk.

**Methodology**

Data was gathered on free agent players in their contract year during the 2016-2017 season. We only use free agents under the assumption that they best exhibit free market forces. The OPS data is gathered on these same players from the previous 3 years 2013-2015. A variable SHIRK is created. To test for shirking we look at whether the SHIRK is affected by the length of a new contract. We use OPS to measure the productivity of player. The OPS or On-base plus slugging is calculated as the sum of a player’s on-base percentage and slugging percentage. We assume higher values of OPS imply higher contribution to winning.

Propose that shirking behavior will be seen by a deviation between a player’s expected and realized performance. (Expected Performance - Actual Performance). Our sample consists of free-agent positions that are not pitchers signing new contracts during the 2016-2017 seasons. Percentage of players that had signed a contract length of 4 years or more was 11.9%. The rest of the sample had signed a contract length below 4 years. In theory there should be an importance between signing a long contract compared to a short one. Player’s signing short contracts are expected to have higher productivity.

The player’s OPS data was collected from “<https://www.baseball-reference.com/leagues/MLB/2016-free-agents.shtml>”. The site contained stats for free agents. For the free agents contract term we used “<https://legacy.baseballprospectus.com/compensation/cots/>”

Regression equation: SHIRK= ß0 + ß1 length + ß2 Age + e

Positive values for SHIRK means that the actual performance falls below the expected performance. Negative values for SHIRK implies that the player outperformed expectations. If positive values of SHIRK tend to occur right after players sign new contracts, then this would be evidence for the contract year hypothesis. Expected performance is created from the average OPS of the player in their past 3 years. Actual performance comes from the year 2017 after the player have signed a new contract. Regression is ran on SHIRK with the independent variables being length of contract and age of player. We must recognize that a player’s contribution could be affected by other factors that we did not control for.

**Results**

Table 1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SHIRK2017 | Coef. | Std. Err. | t-stat | P>t |
| Length | -0.0023877 | 0.0131769 | -0.18 | 0.857 |
| age | 0.0173757\* | 0.0066381 | 2.62 | 0.013 |
| constant | -0.5726929 | 0.2252716 | -2.54 | 0.015 |

**Conclusion**

For our results we find no evidence of shirking when using OPS to measure expected performance. Our results for OPS in determining shirking are consistent with the conclusions found in Krautmann & Donley (2009). The coefficient on length of contract is insignificant. However, the age coefficient is significant at the 95% confidence interval. These are similar results found in Krautmann(2009) when using OPS to measure shirking. There is difficulty in testing the effects of shirking as there is disagreements on the proper standard for measuring a player’s productivity. This is important for testing as the choice of measure can have a crucial effect on the conclusions found. In theory longer contracts would encourage shirking behavior. Our results show that the years of contract has no significant effect on the shirking of players. Other controls could be added to find more significant results. Krautmann (2009) found significant coefficients on length of contract when using marginal revenue productivity of players to measure shirking.

Works Cited

Krautmann, A. C., & Donley, T. D. (2009). Shirking in Major League Baseball Revisited*. Journal of Sports Economics*, 10(3), 292–304. https://doi.org/10.1177/1527002508325817