1 Full-Sample at least 200PAs

Flow of the research

- 1. Specify the player's behavior related to reference dependence: McCrary(2007)'s manipulation test
- 2. Check whether there exists monetary incentive to manipulate their index: Sharp RDD 'like' method
 - If there exists manipulation in fact, then RDD approach can be invalid.
- 3. Time-Series analysis
- 4. Discussion: design the contract
- Panel Data from *fangraphs*, *Baseball References*, and *USA TODAY*.
- Play Stats
 - Season stats from 1957 to 2018 (N = 54469)
 - # with at least 200 Plate appearances = 18143
 - # with at least 5 stolen-bases = 8927

index	type	cutpoint	binsize	bandwidth	θ	Z
AVG	rate	.300	.001	.019	.499	7.442***
					(0.067)	
OBP	rate	.350	.001	.024	.139	2.854**
					(0.049)	
HR	cumulative	20	1	5.309	.259	3.465***
					(.075)	
RBI	cumulative	100	4	15.423	.311	3.295***
					(0.094)	
SB	cumulative	30	1	10.000	.529	4.274***
					(.124)	
		40	1	11.505	.481	2.764**
					(.174)	
PA	cumulative	500	1	0.003	.160	2.515*
					(.063)	
Н	cumulative	200	1	18.922	.453	2.547 *
					(.178)	

***: p < 0.1%, **: p < 1%, *: p < 5%. Bandwidth is optimized following the method of Mcrary(2007).

Table 1: Test for Manipulation :leastPA = 200

Figure 1: AVG (at least 200PA)

Figure 2: OBP (at least 200PA)

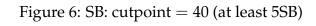


Figure 5: SB: cutpoint = 30 (at least 5SB)

2 Monetary Incentive

- Stats-Salary Data
 - Season stats with information about the contract of the next season: salary, and possession of the free agency, MLB service year, only for position players.
 - data range: 1987 to 2017 (N = 13226)
 - # with at least 200 plate appearances = 8915
 - # with the right of free agency = 1502
 - # around the .300 of batting-average = 2758
 - # among them, with free agency = 402
- In the analysis, I use deviation of the log-annual salary instead of the absolute value of log-salary (need robustness check).

AVG

AVG_300

FLD

BsR

AGE

AGE_sq

WPA

nWPA

FA

Constant

Observations R²
Adjusted R²
Residual Std. Error F Statistic

AVG

AVG_300 FLD

BsR

AGE

AGE_sq

WPA

nWPA

FA

Constant

Observation R²
Adjusted Fresidual Sresidual Sresidual

AVG_300

FLD

BsR AGE

AGE_sq

WPA

nWPA

FA

BAT:AVG_300

Constant

Fixed Effect Observations R² Adjusted R²
Residual Std. Erro

H

O

SI

in A

Н

О

SI

3 Time-Series

- dintinguishing era
 - 1. Before Strike 1987 1994
 - #200PA = 2121
 - # around .300 = 575
 - #FA = 279
 - # around .300 = 54
 - 2. From Strike to Moneyball 1995 2003
 - #200PA = 2668
 - # around .300 = 938
 - #FA = 2092
 - # around .300 = 462
 - 3. After Moneyball 2004 2017
 - #200PA = 4126
 - # around .300 = 1245
 - #FA = 1023 (Contract yrs gets longer?)
 - # around .300 = 219
 - 4. (After Flyball Rebolution?)

AVG_300

FLD

BsR AGE

AGE_sq

WPA

nWPA

FA

BAT:AVG_300

Constant

Fixed Effect Observations R² Adjusted R² Residual Std. F Statistic

AVG_300

FLD

BsR

AGE

AGE_sq

WPA

nWPA

FA

BAT:AVG_300

Constant

Fixed Effect Observations R² Adjusted R² Residual Std. F Statistic

AVG_300

FLD

BsR

AGE

AGE_sq

WPA

nWPA

FA

BAT:AVG_300

Constant

Fixed Effect
Observations
R²
Adjusted R²
Residual Std. Erro
F Statistic

AVG

AVG_300

ERAbfst

ERAstmb

AVG:AVG_300

AVG:ERAbfst

AVG:ERAstmb

AVG_300:ERAbfst

AVG_300:ERAstmb

AVG:AVG_300:ERA

AVG:AVG_300:ERA

Constant

Fixed Effect
Other Control
FLD,BsR
AGE, AGEsq
WPA, nWPA
FA
Observations
R²
Adjusted R²
Residual Std. Error
F Statistic