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)	
H	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 3: HR (at least 200PA)

Figure 4: RBI (at least 200PA)

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

Figure 6: SB: cutpoint $= 40$ (at least 5SB)

Figure 7: PA (at least 200PA)

Figure 8: H (at least 200PA)

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
R^2
Adjusted R^2
Residual Std. Error
F Statistic
Note:

AVG	
AVG_300	
FLD	
BsR	
AGE	
AGE_sq	
WPA	
nWPA	
FA	
Constant	
Observatio	
R^2	
Adjusted R	
Residual St	
F Statistic	
Note:	

BAT	
AVG_300	
FLD	
BsR	
AGE	
AGE_sq	
WPA	
nWPA	
FA	
BAT:AVG_300	
Constant	
Fixed Effect	
Observations	
R^2	
Adjusted R^2	
Residual Std. Erro	
F Statistic	

Note:

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?)

BAT	
AVG_300	
FLD	
BsR	
AGE	
AGE_sq	
WPA	
nWPA	
FA	
BAT:AVG_300	
Constant	
Fixed Effect	
Observations	
R^2	
Adjusted R^2	
Residual Std.	
F Statistic	
Note:	

BAT	
AVG_300	
FLD	
BsR	
AGE	
AGE_sq	
WPA	
nWPA	
FA	
BAT:AVG_300	
Constant	
Fixed Effect	
Observations	
R^2	
Adjusted R^2	
Residual Std. E	
F Statistic	
Note:	

BAT	
AVG_300	
FLD	
BsR	
AGE	
AGE_sq	
WPA	
nWPA	
FA	
BAT:AVG_300	
Constant	
Fixed Effect	
Observations	
R^2	
Adjusted R^2	
Residual Std. Err	
F Statistic	
Note:	

AVG	
AVG_300	
ERAbfst	
ERAstmb	
AVG:AVG_300	
AVG:ERAbfst	
AVG:ERAstmb	
AVG_300:ERAbfst	
AVG_300:ERAstmb	
AVG:AVG_300:ERAl	
AVG:AVG_300:ERAs	
Constant	
Fixed Effect	
Other Control	
FLD,BsR	
AGE, AGE_{sq}	
WPA, nWPA	
FA	
Observations	
R^2	
Adjusted R^2	
Residual Std. Error	
F Statistic	
Note:	