Loss aversion in the field

RISK PREFERENCES PART 5

Evidence of Loss Aversion in the Field

Thus far, we've focused on documenting evidence of loss aversion in laboratory experiments or lab-in-the-field study:

- Bets with 50% chance to win X and 50% chance to lose Y
- Endowment effect w/ mugs

Evidence of Loss Aversion in the Field

Do we find any evidence of loss aversion in the field (i.e., the real world)?

- We are often interested in whether behavior persists with "real stakes" (i.e., when the outcome really matters), e.g. marathon runners & college admissions

How can we benefit from the knowledge of loss aversion in the real world applications?

Reference-Dependent Preferences:
Evidence from Marathon Runners
Allen, Dechow, Pope & Wu (2014)

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Reference-Dependent Preferences: Evidence from Marathon Runners

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Abstract. Theories of reference-dependent preferences propose that individuals evaluate outcomes as gains or losses relative to a neutral reference point. We test for reference dependence in a large data set of marathon finishing times (n = 9,789,093). Models of reference-dependent preferences such as prospect theory predict bunching of finishing times at reference points. We provide visual and statistical evidence that round numbers (e.g., a four-hour marathon) serve as reference points in this environment and as a result produce significant bunching of performance at these round numbers. Bunching is driven by planning and adjustments in effort provision near the finish line and cannot be explained by explicit rewards (e.g., qualifying for the Boston Marathon), peer effects, or institutional features (e.g., pacesetters).

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Supplemental Material: Data and the online appendix are available at https://doi.org/10.1287/mnsc.2015.2417.

Keywords: reference dependence • prospect theory • loss aversion • bunching • effort provision

Reference-Dependent Preferences: Evidence from Marathon Runners

Allen, Dechow, Pope & Wu (2014)

- The marathon is a 26.2 mile(42 km) road race that is popular with both professional athletes and recreational runners.
- The vast majority of runners receive no financial compensation for their performance.

Reference-Dependent Preferences: Evidence from Marathon Runners

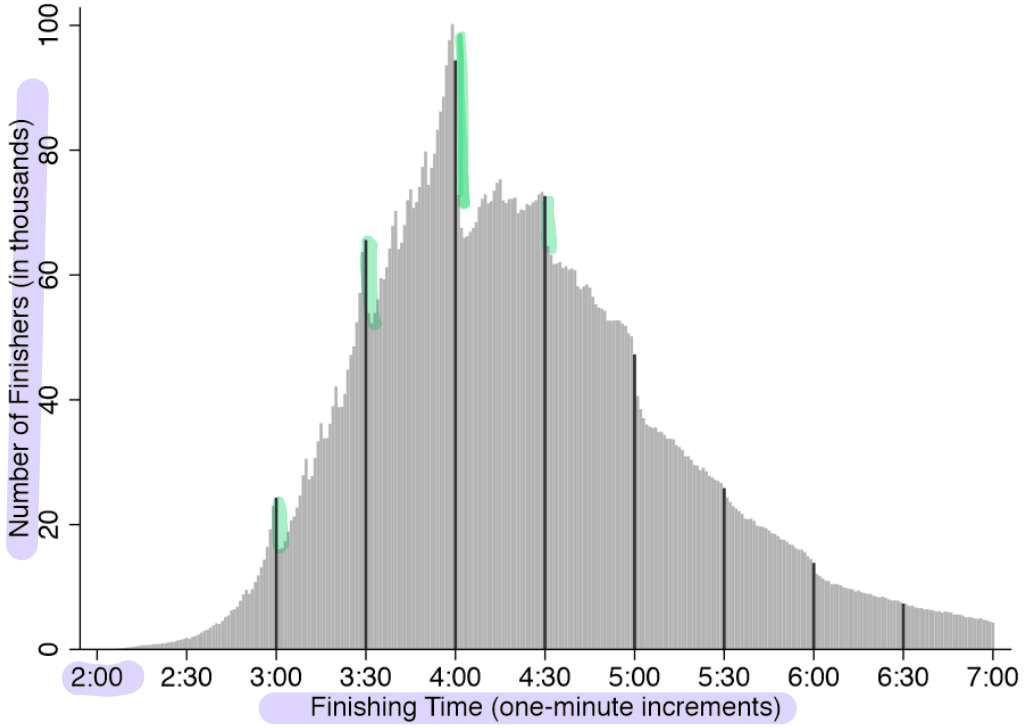
Allen, Dechow, Pope & Wu (2014)

- For the overwhelming majority of runners, finishing times are a source of internal pride and fulfillment and not an extrinsic reward.

Question:

Do runners bunch around round-numbered finishing times?

Figure 2: Distribution of marathon finishing times ($n = 9,524,071$)



Reference-Dependent Preferences: Evidence from Marathon Runners

Allen, Dechow, Pope & Wu (2014)

- Consistent with a simple model of reference-dependent preferences and in sharp contrast with the predictions from a standard model of utility, a lumpy distribution of finishing times, with bunching just ahead of round numbers, was found.
- Runners are more likely to speed up and less likely to slowdown when they are on pace to finish just ahead of a round number reference point.

Round Numbers as Goals

Pope & Simonsohn (2011)

- Evidence from college admissions data suggest that a student's probability of admission increases with their SAT score.

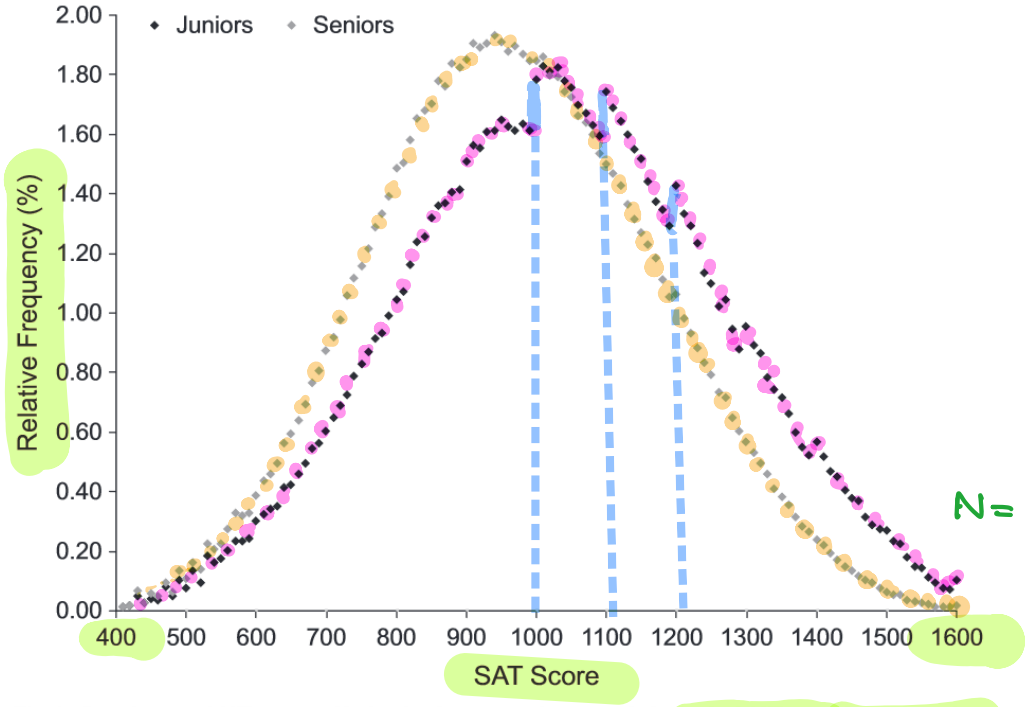
- But, the probability does not disproportionately change as their SAT scores pass round numbers.
  - There are similar difference in admission rates for students getting 1490 vs. 1500 and 1500 vs. 1510.

Round Numbers as Goals

Pope & Simonsohn (2011)

- Most juniors have the opportunity to retake the SATs in their senior year while most seniors don't have the time to take the test again.

- **Question: Are high school students more likely to retake the SATs if they get a score just below a round number (e.g., 1500)?**



N= 4,323,906

Fig. 3. Distribution of SAT scores of high school juniors and seniors. Only the final SAT score for each student was included in this data set.

finance x Beh. econ

Are Investors Reluctant to Realize Their Losses?

Odean (Journal of Finance 1998)

- Identifies a reference-point effect
- Domain: equity markets.
- Reference point: nominal purchase price of stocks.

Are Investors Reluctant to Realize Their Losses?

Odean (Journal of Finance 1998)

- **Disposition Effect:** When investors sell their stocks, they are more prone to sell their winners than their losers. They ended up holding the losers for too long.

Note: A stock is a winner if its current price is above its purchase price, and it is a loser if its current price is below its purchase price.

– not on the exam

Labor Supply Of New York City Cabdrivers: One Day At A Time

Camerer, Babcock, Loewenstein, & Thaler (QJE 1997)

Labor econ x Beh. econ

LABOR SUPPLY OF NEW YORK CITY CABDRIVERS: ONE DAY AT A TIME*

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Life-cycle models of labor supply predict a positive relationship between hours supplied and transitory changes in wages. We tested this prediction using three samples of wages and hours of New York City cabdrivers, whose wages are correlated within days but uncorrelated between days. Estimated wage elasticities are significantly negative in two out of three samples. Elasticities of inexperienced drivers average approximately -1 and are less than zero in all three samples (and significantly less than for experienced drivers in two of three samples). Our interpretation of these findings is that cabdrivers (at least inexperienced ones): (i) make labor supply decisions "one day at a time" instead of intertemporally substituting labor and leisure across multiple days, and (ii) set a loose daily income target and quit working once they reach that target.

Labor Supply Of New York City Cabdrivers: One Day At A Time

Camerer, Babcock, Loewenstein, & Thaler (QJE 1997)

- Identify an empirical anomaly that can be accommodated by loss aversion.

For many jobs, people choose how to allocate their labor from day-to-day, or from week-to-week, or from month-to-month.

wage ↑ → working hour ↑

- Benchmark: The standard life-cycle model of labor supply says that, if your wage varies over time, you should work more when the wage is high than you do when the wage is low. You efficiently allocate your work effort.

They test this prediction on NYC cab drivers. daily average wage ↑ → daily working hour ↑

One Day At A Time

- Data: Three samples of trip sheets.

TRIP: 70 trip sheets from 13 drivers (spring 1994 from one fleet company).

TLC1: 1044 trip sheets from 484 drivers (fall 1990 from TLC).

TLC2: 712 trip sheets from 712 drivers (fall 1988 from TLC).

Labor Supply Of New York City Cabdrivers: One Day At A Time

Camerer, Babcock, Loewenstein, & Thaler (QJE 1997)

- They take their unit of observation to be a day, in particular, they estimate a daily wage equation:

daily labor supply equation:

$$lnH_{it} = \gamma lnW_{it} + \beta X_{it} + \epsilon_{it} + \alpha_i$$

- H_{it} is hours worked on day t. for cab driver i
- W_{it} is average wage on day t. for cab driver i
- Standard model predicts $\gamma > 0$, that is, positive wage elasticity.

$W_{it} \uparrow \rightarrow H_{it} \uparrow$

TABLE II
OLS LOG HOURS WORKED EQUATIONS

Sample	TRIP		TLC1		TLC2
Log hourly wage ($\hat{\gamma}$)	−.411	−.186	−.501	−.618	−.355
	(.169)	(.129)	(.063)	(.051)	(.051)
High temperature	.000	−.000	.001	.002	−.021
	(.002)	(.002)	(.002)	(.002)	(.007)
Shift during week	−.057	−.047	−.004	.030	—
	(.019)	(.033)	(.035)	(.042)	
Rain	.002	.015	—	—	−.150
	(.035)	(.035)			(.062)
Night shift dummy	.048	−.049	−.127	−.294	−.253
	(.053)	(.049)	(.034)	(.047)	(.038)
Day shift dummy	—	—	.000	.053	—
			(.028)	(.045)	
Fixed effects	No	Yes	No	Yes	No
Adjusted R^2	.243	.484	.175	.318	.146
Sample size	70	65	1044	794	712
Number of drivers	13	8	484	234	712

neg. wage elasticity

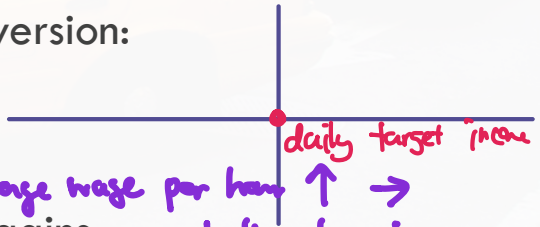
Dependent variable is the log of hours worked. Standard errors are in parentheses and are corrected for the nonfixed effects estimates in coulmns 1 and 3 to account for the panel structure of the data. Explanatory variables are described in Appendix 1.

Labor Supply Of New York City Cabdrivers: One Day At A Time

Camerer, Babcock, Loewenstein, & Thaler (QJE 1997)

daily average wage ↑ → daily working hour ↓

- Main result: They estimate $\gamma < 0$. That is, negative wage elasticity.
- Hence, they have identified an anomaly: The standard model predicts positive wage elasticities, but they found negative wage elasticities.
- This can be accommodated by loss aversion, specifically, their explanation is income targeting driven by loss aversion:
  - one-day time horizon for decision making;
  - reference point is a daily income target;
  - losses relative to the target loom larger than gains.



Enhancing the Efficacy of Teacher Incentives Through Loss Aversion: A Field Experiment

Fryer, Levitt, List & Sadoff (2012)

Enhancing the Efficacy of Teacher Incentives Through Loss Aversion

- The "Gain" treatment – received "traditional" financial incentives in the form of bonuses at the end of the year linked to student achievement.
- The "Loss" treatment – were given a lump sum payment at the beginning of the school year and informed that they would have to return some or all of it if their students did not meet performance targets.
- Importantly, teachers in the "Gain" and "Loss" groups with the same performance received the same final bonus.

Enhancing the Efficacy of Teacher Incentives Through Loss Aversion

The paper demonstrated that exploiting the power of loss aversion—teachers are paid in advance and asked to give back the money if their students do not improve sufficiently—increases math test scores.

Loss aversion x

Loss aversion x Equity premium puzzle

eg. 'myopic loss aversion'

Loss aversion x Cultural differences

Loss aversion x Housing market

Loss aversion x Social image concern