Econ 219B
Psychology and Economics: Applications
(Lecture 4)

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Outline

1. Seven More Applications of Present Bias
2. Present Bias: Summary
3. Reference Dependence: Introduction
4. Reference Dependence: Endowment Effect
5. Methodology: Effect of Experience

1 Seven More Applications of Present Bias

1.1 Fertilizer Adoption

- Duflo, Kremer, and Robinson (2009): Invest in fertilizer
- Development: Why so little adoption of fertilizer and high-yield seeds?
- Literature examining role of learning, social learning
  - Effect of fertilizer in Western Kenya
  - Field Experiments: In appropriate proportions high returns
  - However, low adoption

Table 1: Returns to Fertilizer

	Top Dressing 1/4 Teaspoon			Top Dressing 1/2 Teaspoon			Top Dressing 1 teaspoon 1 Teaspoon		
	mean	median	obs	mean	median	obs	mean	median	obs
Panel A: Not Annualized									
25 Ksh per goro-goro	0.080	-0.327	116	0.189	0.156	202	-0.476	-0.494	85
40 Ksh per goro-goro	0.728	0.077	116	0.903	0.850	202	-0.161	-0.191	85
Panel B: Annualized									
25 Ksh per goro-goro	0.362	-0.794	116	1.002	0.786	202	-0.788	-0.805	85
40 Ksh per goro-goro	1.272	0.118	116	1.625	1.515	202	-0.190	-0.225	85

- Possible explanation of puzzle: Farmers would like to purchase fertilizer, but they run out of money by the time the new season comes

- Experiment (SAFI Program):
  - Manipulate timing of adoption
  - Farmers can pre-buy fertilizer at end of previous season (when 'rich')

– Significant effect on adoption

Table 8: Adoption for Parents Sampled for School-Based SAFI and Subsidy

Season	*Long Rains 2004*	*Short Rains 2004*
Number of Seasons after School-Based Demonstration Plot	*1*	*2*
Number of Seasons after Starter Kit Program	-	*1*
Programs for which an effect would be expected in the given season (coefficients in **bold**)	*SAFI LR 2004 Demo Plot*	*SAFI SR 04 Subsidy Full Price Visit Starter Kit*
Panel A. Control for School	(1)	(2)
Starter Kit Farmer	0.085	**0.047**
	(0.045)*	**(0.049)**
Sampled to Participate in School Demonstration Plot	**-0.046**	0.018
	(0.064)	(0.071)
SAFI Long Rains 2004	**0.103**	-0.020
	(0.038)**	(0.043)
SAFI Short Rains 2004	-0.037	**0.169**
	-0.047	**(0.053)****
Subsidy Short Rains 2004	-0.046	**0.142**
	(0.056)	**(0.063)****
Full Price Visit Short Rains 2004	-0.089	**0.070**
	(0.056)	**(0.063)**
Observations	874	752

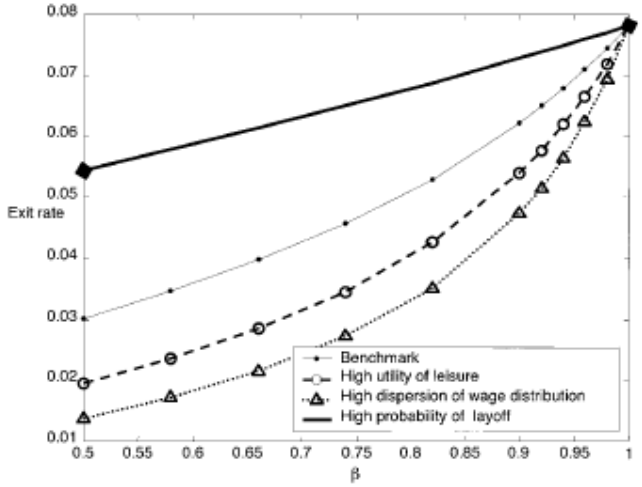
1.2 Job Search

- DellaVigna and Paserman (*JOLE* 2003)

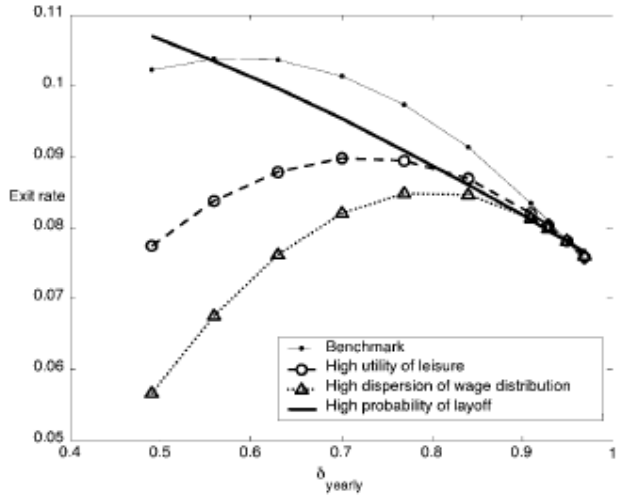
- Stylized facts:
  - time devoted to job search by unemployed workers: 9 hours/week
  - search effort predicts exit rates from unemployment better than reservation wage choice

- Model with costly search effort and reservation wage decision:
  - search effort — immediate cost, benefits in near future — driven by β
  - reservation wage — long-term payoffs — driven by δ

a


0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
Exit rate
0.5
0.55
0.6
0.65
0.7
0.75
0.8
0.85
0.9
0.95
1
β
Benchmark
High utility of leisure
High dispersion of wage distribution
High probability of layoff

b


0.11
0.1
0.09
0.08
0.07
0.06
0.05
Exit rate
0.4
0.5
0.6
0.7
0.8
0.9
1
δ yearly
Benchmark
High utility of leisure
High dispersion of wage distribution
High probability of layoff

- Correlation between measures of impatience (smoking, impatience in interview, vocational clubs) and job search outcomes:
  - Impatience $\uparrow \Longrightarrow$ search effort $\downarrow$
  - Impatience $\uparrow \Longrightarrow$ reservation wage $\longleftrightarrow$
  - Impatience $\uparrow \Longrightarrow$ exit rate from unemployment $\downarrow$
- Impatience captures variation in β
- Sophisticated or naive – does not matter

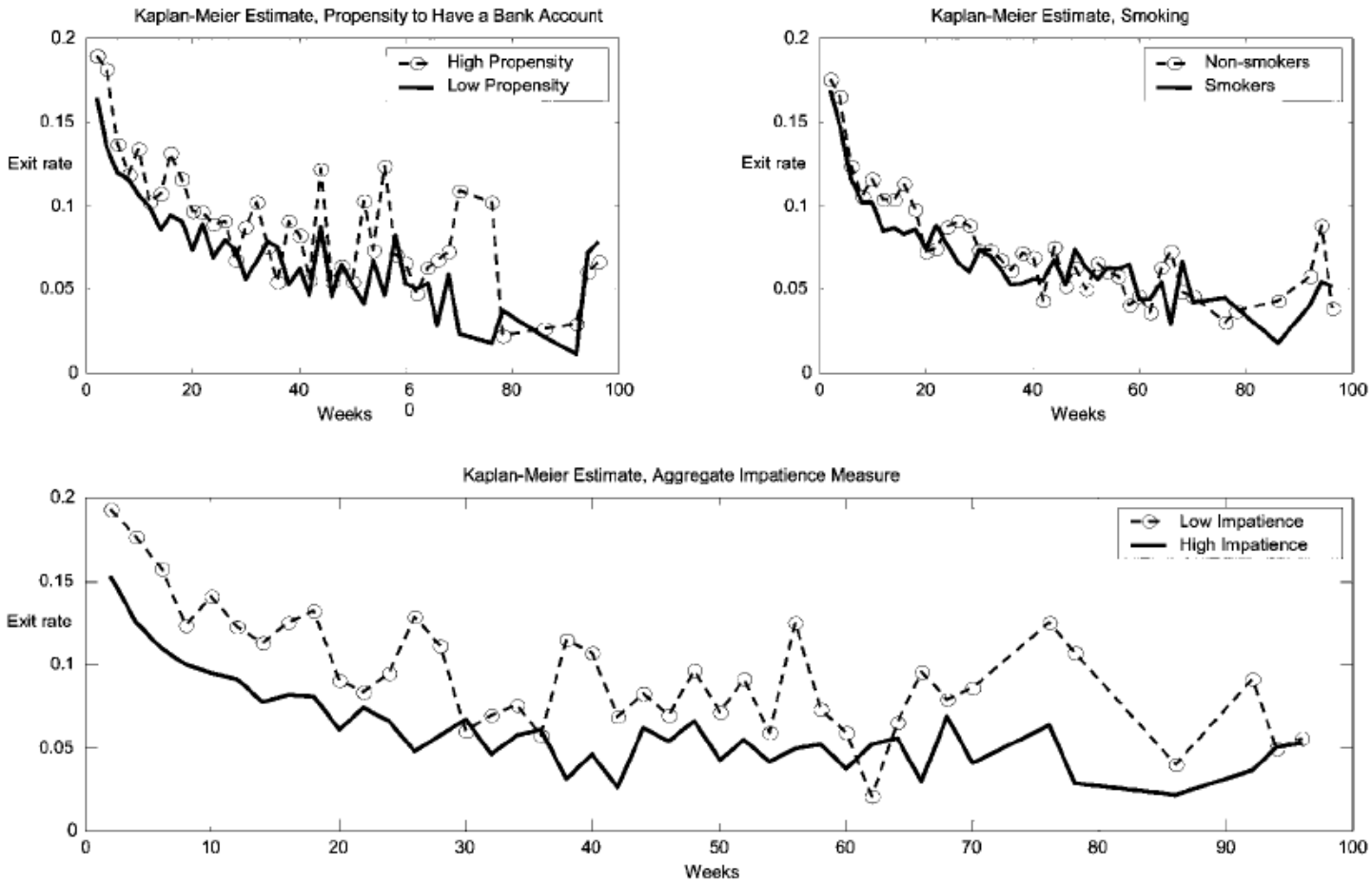


FIG. 3.—Exit rates in the NLSY

- Paserman (EJ forthcoming):
  - Structural model estimated by max. likelyhood
  - Estimation exploits non-stationarity of exit rate from unemployment

Table 2: Estimated Model Parameters †

		Low Wage Sample	**Medium Wage Sample**		**High Wage Sample**
		Lognormal	Lognormal	Normal	Lognormal
Discounting Parameters					
	β	**0.4021**	**0.4833**	**0.8140**	**0.8937**
		(0.1075)	**(0.1971)**	**(0.1672)**	**(0.1441)**
	δ	0.9962	1.0000*	1.0000*	0.9989
		(0.1848)	(0.0001)	(0.0019)	(0.1798)
Value of time when unemployed					
	b_0	-141.61	-164.31	-7.38	-308.78
		(61.16)	(61.43)	(16.54)	(193.53)

1.3 Welfare programs

- Fang, Silverman (2002, 2007)

- Stylized Facts:
  - limited transition from welfare to work
  - (more importantly) large share of mothers staying home and not claiming benefits

- Examines decisions of single mothers with kids. Three states: Welfare (leisure + benefits), Work (wages), Home (leisure)

- Mothers stay home because of one-time social disapproval of claiming benefits

- Naiveté crucial here

1.4 Addiction

- Standard model: Rational addiction (Becker and Murphy, 1988)
  - Past consumption lowers current total utility...
  - ...but raises current marginal utility

- Stylized facts:
  - Diffusion of addictions (drugs, alcohol, tobacco, obesity)
  - Repeated efforts of quitters
  - Antabuse
  - Rational addiction?

- Facts suggestive of present-bias (O'Donoghue and Rabin, 2003; Gruber and Koszegi, 2003)

- Standard test of addiction: Does cigarette consumption at t respond to future prices at $t+1$?
  - Becker, Grossman, and Murphy, *AER* 1994: Future prices lower current consumption
  - BUT: Data problems (yearly data; sales data, not consumption data)

- Gruber and Koszegi, *QJE* 2001:
  - Response of consumption to present and future taxes at monthly level
    - Consumption data: Smoking for mothers in National Vital Statistics
    - Price data: Legislated tax increase at monthly horizon
  - Compare response to tax increases at $t+1$ and $t+2$ to estimate β and δ
  - BUT: limited power –> Cannot separate present bias vs. rational addition

- Levy (2009):
  - Revisit Gruber and Koszegi, *QJE* 2001 with novel test for present bias (and projection bias)
    1. Compare response to price increase at t and at $t+1$
    2. Supplement with response to temporary (price of tobacco) vs. permanent (taxes) price increases
  - Some evidence of present bias, stronger evidence of projection bias

- Gruber and Mullainathan (2006): Use happiness data
  - (Predicted) smokers happier in states one year after smoking taxes are raised
  - Could also be rational response given yearly data

- Literature offering commitment devices along the lines of Ashar, Karlan and Yin:
  - **Smoking.** Karlan et al (2008):
    - Payment to stop smoking
    - Verify nicotine content in body
  - **Online Games.** Acland and Chow (in progress):
    - Program that limits hours of online play for Internet games such as World of Warcraft
    - People that express demand for commitment are randomized into treatment (get device) and control (do not get device)
    - Can observe time played + Match to Berkeley grades

1.5 Obesity

- Overweght and obesity rates doubled over last two decades in US:
  - 1985: No US state has an obesity rate above 15%
  - 2007: only one state (Colorado) has obesity rate below 20%, most states are above 25%
- Problem increasingly common also internationally: UK, Mexico,...
- What explains the increase?
  - Cutler, Glaeser, and Shapiro (*JEP* 2003): Decrease in fixed cost of preparing food + self-control

- Currie, DellaVigna, Moretti, and Pathania (2008): Fast-foods may have a role, but only partial
  - Fitness Test for CA 9th graders: Obesity rate increase by 5 percent if f.f. $<.1$ miles of school
  - Fitness Test for CA 9th graders: No effect at larger distances
  - Weight gain of pregnant mothers: Small (but significant) effect of f.f. $<.5$ miles of residence
  - Possible explanation: Self-control problems –> Temptation of near-by school
  - Could also be transport costs

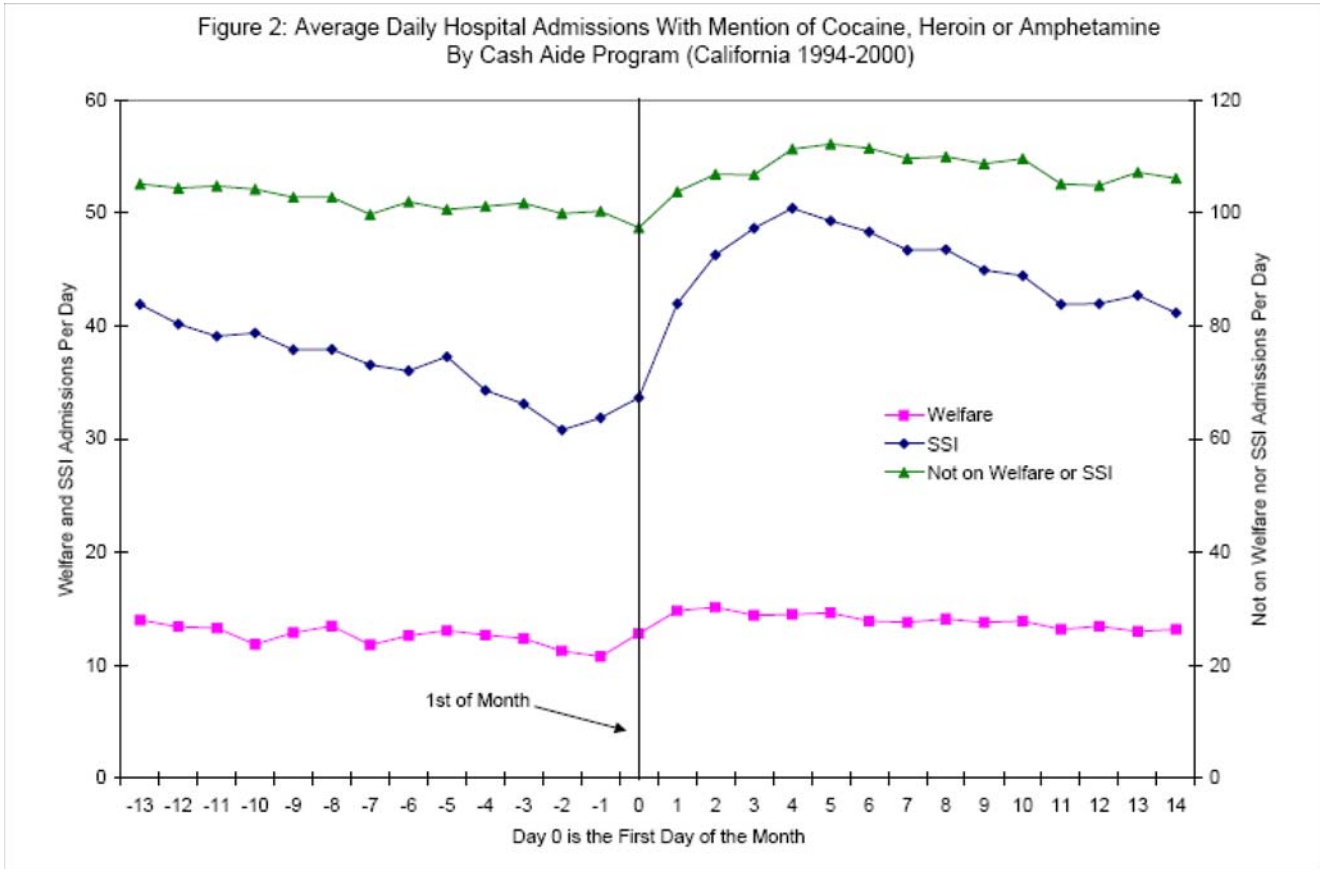
- Need for field experiments to separate hypotheses

1.6 Payday effects

- Shapiro (2003), Melvin (2003), Huffman and Barenstein (2003)

- Stylized facts:
  - Purchases increase discretely on payday
  - Effect more pronounced for more tempting goods
  - Food intake increases as well on payday
  - Drug arrests and hospitalization spike on payday (Dobkin and Puller, 2007)

- SSI payments made on 1st of the month



1.7 Firm pricing

- **T.** Two-part tariffs chosen by firms to sell investment and leisure goods (DellaVigna and Malmendier, 2004)

- **F.** Pricing of magazines (Oster and Scott-Morton, 2005)

- See later Section on Firm Response

2 Present Bias: Final Lessons

- Four methodologies so far:

1. Empirical evidence of type 1 (DellaVigna and Malmendier, 2004; Miravete, 2004; Souleles, 2004):

   - **Menu choice**. Need to observe:

   (a) menu of options –> Use revealed preferences to make inferences

   (b) later consumption decision –> Compared to revealed preferences in (a)

   - Worries: hard to distinguish unusual preferences (self-control) and wrong beliefs (naiveté, overconfidence)

2. Empirical evidence of type 2 (Madrian and Shea, 1999; Choi et al.:, 2001):

- **Natural Experiments.** Observe variable:

(a) At time t, change in regime – Look at (After t - Before t)

(b) Possibly have control group (Diff-in-Diff)

- Worries:
  - Endogeneity of change
  - Other changes occurring at same time
  - How many observations? Maybe $n = 1$?

3. Empirical evidence of type 3 (Ashraf et al., 2005; Ausubel, 1999):

   - **Field experiment.**

   (a) Naturalistic setting

   (b) Randomize treatment – Compare Treatment and Control group

   - Plus: Randomization ensures clean identification

   - Minus: Not easy to run

4. Empirical evidence of type 5 (Laibson, Repetto, and Tobacman, 2005; Paserman, 2007):

   - **Structural Identification.**

   (a) Write model explicitly

   (b) Identify parameters

   - Plus: Can better link theory and evidence

   - Plus: More amenable to welfare and policy evaluations

   - Minus: Identification less transparent – Results can depend critically on model assumptions

- Present bias/Hyperbolic Discounting

- Reasons for success:

  1. Simple model (one-, then two- parameter deviation). YES
  2. Powerful intuition (immediate gratification) YES
  3. Support in the laboratory OK
  4. Support from field data YES

- Lead to new subfield (behavioral contract theory/behavioral IO)

- Next: Reference Dependence

- Status:

  1. Simple model (four new features). YES
  2. Powerful intuition (reference points) YES
  3. Support in the laboratory YES
  4. Support from field data OK, more needed

3 Reference Dependence: Introduction

- Kahneman and Tversky (1979) — Anomalous behavior in experiments:

  1. *Concavity over gains.* Given \$1000, A=(500,1) $\succ$ B=(1000,0.5;0,0.5)

  2. *Convexity over losses.* Given \$2000, C=(-1000,0.5;0,0.5) $\succ$ D=(-500,1)

  3. *Framing Over Gains and Losses.* Notice that A=D and B=C

  4. *Loss Aversion.* (0,1) $\succ$ (-8,.5;10,.5)

  5. *Probability Weighting.* (5000,.001) $\succ$ (5,1) and (-5,1) $\succ$ (-5000,.001)

- Can one descriptive model theory fit these observations?

- **Prospect Theory** (Kahneman and Tversky, 1979)

- Subjects evaluate a lottery $(y, p; z, 1-p)$ as follows: $\pi(p)\, v(y-r) + \pi(1-p)\, v(z-r)$

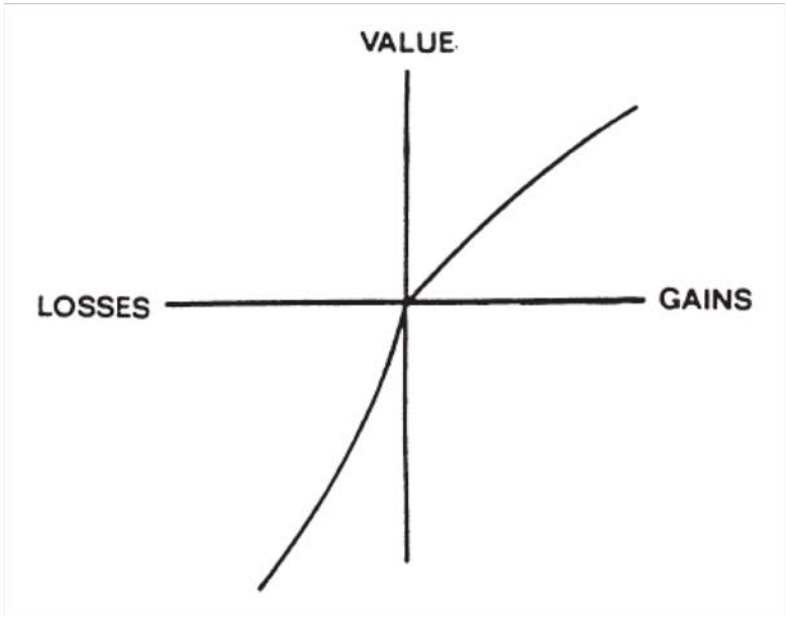
- Five key components:

  1. Reference Dependence

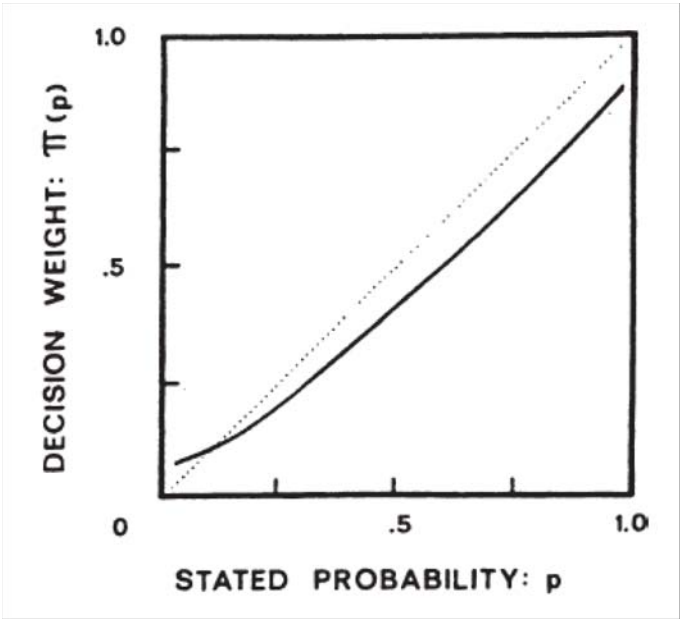
     - Basic psychological intuition that changes, not levels, matter (applies also elsewhere)

     - Utility is defined over differences from reference point r –> Explains Exp. 3

2. Diminishing sensitivity.
   - Concavity over gains of v –> Explains (500,1)$\succ$(1000,0.5;0,0.5)
   - Convexity over losses of v –> Explains (-1000,0.5;0,0.5)$\succ$(-500,1)
3. Loss Aversion –> Explains (0,1) $\succ$ (-8,.5;10,.5)



4. Probability weighting function π non-linear –> Explains (5000,.001) $\succ$ (5,1) and (-5,1) $\succ$ (-5000,.001)



- Overweight small probabilities + Premium for certainty

- Tversky and Kahneman (1992) propose calibrated version

$$v(x) = \begin{cases} (x-r)^{.88} & \text{if } x \geq r; \\ -2.25\,(-(x-r))^{.88} & \text{if } x < r, \end{cases}$$

and

$$w(p) = \frac{p^{.65}}{\left(p^{.65} + (1-p)^{.65}\right)^{1/.65}}$$

- Most field applications use only (1)+(3), or (1)+(2)+(3)

$$v(x) = \begin{cases} x - r & \text{if } x \geq r; \\ \lambda(x-r) & \text{if } x < r, \end{cases}$$

- Reference point r?

- Open question – depends on context

- Koszegi-Rabin (2004): rational expectations equilibrium

5. Narrow framing (Barberis, Huang, and Thaler, 2006; Rabin and Weizsäcker, forthcoming)
   - Consider only risk in isolation (labor supply, stock picking, house sale)
   - Neglect other relevant decisions

4 Reference Dependence: Endowment Effect

- Plott and Zeiler (AER 2005) replicating Kahneman, Knetsch, and Thaler (JPE 1990)
  - Half of the subjects are given a mug and asked for WTA
  - Half of the subjects are shown a mug and asked for WTP
  - Finding: $WTA \simeq 2 * WTP$

Table 2: Individual Subject Data and Summary Statistics from KKT Replication

Treatment	Individual Responses (in U.S. dollars)	Mean	Median	Std. Dev.
WTP (n = 29)	0, 0, 0, 0, 0.50, 0.50, 0.50, 0.50, 0.50, 1, 1, 1, 1, 1, 1.50 2, 2, 2, 2, 2, 2.50, 2.50, 2.50, 3, 3, 3.50, 4.50, 5, 5	1.74	1.50	1.46
WTA (n = 29)	0, 1.50, 2, 2, 2.50, 2.50, 3, 3.50, 3.50, 3.50, 3.50, 3.50, 4, 4.50 4.50, 5.50, 5.50, 5.50, 6, 6, 6, 6.50, 7, 7, 7, 7.50, 7.50, 7.50, 8.50	4.72	4.50	2.17

- How do we interpret it? Use reference-dependence in piece-wise linear form
  - Utility is sum of utility of owning the object $u(m-r)$ plus utility of money p
  - Assumption: No loss-aversion over money
  - If given mug, $r = 1$, so selling money feels like a loss
  - If not given mug, $r = 0$, so getting money feels like a gain

- This implies:
  - WTA: $u(1-1) = u(0-1) + WTA$
  - WTP: $u(0-0) = u(1-0) - WTP$
  - Assuming $u(1-1) = u(0-0) = 0$, it follows that

$$WTA = -u(-1) = \lambda u(1) = \lambda WTP$$

- Result $WTA \simeq 2 * WTP$ is consistent with loss-aversion $\lambda \simeq 2$

- Plott and Zeiler (AER 2005): The result disappears with
  - appropriate training
  - practice rounds
  - incentive-compatible procedure
  - anonymity

Pooled Data	WTP (n = 36)		6.62	6.00	4.20
	WTA (n = 38)		5.56	5.00	3.58

- What interpretation?
- Interpretation 1. Endowment effect and loss-aversion interpretation are wrong
- Interpretation 2. In Plott-Zeiler (2005) experiment, subjects did not perceive the reference point to be the endowment
- Suppose that, as in Koszegi-Rabin, the reference point is (.5, mug; .5, no mug) in both cases
  - WTA: $.5 * u(1-1) + .5 * u(1-0) = .5 * u(0-1) + .5 * u(0-0) + p_{WTA}$
  - WTP: $.5 * u(0-1) + .5 * u(0-0) = .5 * u(1-1) + .5 * u(1-0) - p_{WTP}$
  - This implies: $p_{WTA} = p_{WTP}$

- Notice: Open question, with active follow-up literature
  - Plott-Zeiler (AER 2007): Similar experiment with different outcome variable: Rate of subjects switching
  - Isoni, Loomes, and Sugden (2008):
    * In Plott-Zeiler data, there is endowment effect for lotteries in training rounds!
    * Result replicates: for lotteries, mean WTA is larger than the mean WTP by a factor of between 1.02 and 2.19

- Need for rejoinder paper(s)

- List (2003) – Further test of endowment effect and role of experience

- Protocol:
  - Get people to fill survey
  - Hand them memorabilia card A (B) as thank-you gift
  - After survey, show them memorabilia card B (A)
  - "Do you want to switch?"
  - "Are you going to keep the object?"
  - Experiments I, II with different object

- Prediction of Endowment effect: too little trade

- Experiment I with Sport Cards – Table II

TABLE II

SUMMARY TRADING STATISTICS FOR EXPERIMENT I: SPORTSCARD SHOW

Variable	Percent traded	*p*-value for Fisher's exact test
Pooled sample (n = 148)		
Good A for Good B	32.8	<0.001
Good B for Good A	34.6	
Dealers (n = 74)		
Good A for Good B	45.7	0.194
Good B for Good A	43.6	
Nondealers (n = 74)		
Good A for Good B	20.0	<0.001
Good B for Good A	25.6	

a. Good A is a Cal Ripken, Jr. game ticket stub, circa 1996. Good B is a Nolan Ryan certificate, circa 1990.
b. Fisher's exact test has a null hypothesis of no endowment effect.

- Experiment II with Pins – Table V

TABLE V
SUMMARY TRADING STATISTICS FOR EXPERIMENT II: PIN TRADING STATION

Variable	Percent traded	p-value for Fisher's exact test
Pooled sample (n = 80)		
Good C for Good D	25.0	<0.001
Good D for Good C	32.5	
Inexperienced consumers (<7 trades monthly; n = 60)	25.0	<0.001
Experienced consumers (≥7 trades monthly; n = 20)	40.0	0.26
Inexperienced consumers (<5 trades monthly; n = 50)	18.0	<0.001
Experienced consumers (≥5 trades monthly; n = 30)	46.7	0.30

- **Finding 1.** Strong endowment effect for inexperienced dealers

- How to reconcile with Plott-Zeiler?
  - Not training (nothing difficult about switching cards)
  - Not practice (people used to exchanging cards)
  - Not incentive compatibility
  - Is it anonymity? Unlikely

- **Finding 2.** Substantial experience lowers the endowment effect to zero
  - Getting rid of loss aversion?

– Expecting to trade cards again? (Koszegi-Rabin, 2005)

- Objection 1: Is it experience or is it just sorting?

- Experiment III with follow-up of experiment I – Table IX

TABLE IX
SUMMARY STATISTICS FOR EXPERIMENT III: FOLLOW-UP SPORTSCARD SHOW

	Increased number of trades	Stable number of trades	Decreased number of trades
No trade in Experiment I; trade in Experiment III	13	1	2
No trade in Experiment I; no trade in Experiment III	8	7	11
Trade in Experiment I; Trade in Experiment III	4	0	0
Trade in Experiment I; No trade in Experiment III	2	0	5
N	27	8	18

a. Columns denote changes in subjects' trading experience over the year; rows denote subjects' behavior in the two field trading experiments.
b. Fifty-three subjects participated in both Experiment I and the follow-up experiment.

- Objection 2. Are inexperienced people indifferent between different cards?

- People do not know own preferences – Table XI

TABLE XI
SELECTED CHARACTERISTICS OF TUCSON SPORTSCARD PARTICIPANTS

	Dealers		Nondealers	
	WTA mean (std. dev.)	WTP mean (std. dev.)	WTA mean (std. dev.)	WTP mean (std. dev.)
Bid or offer	8.15	6.27	18.53	3.32
	(9.66)	(6.90)	(19.96)	(3.02)
Trading experience	16.67	15.78	4.00	3.73
	(19.88)	(13.71)	(5.72)	(3.46)
Years of market experience	10.23	10.57	5.97	5.60
	(5.61)	(8.13)	(5.87)	(6.70)

- Objection 3. What are people learning about?
- Getting rid of loss-aversion?
- Learning better value of cards?
- If do not know value, adopt salesman technique
- Is learning localized or do people generalize the learning to other goods?

- List (EMA, 2004): Field experiment similar to experiment I in List (2003)

- Sports traders but objects are mugs and chocolate

- Trading in four groups:

  1. Mug: "Switch to Chocolate?"

  2. Chocolate: "Switch to Mug?"

  3. Neither: "Choose Mug or Chocolate?"

  4. Both: "Switch to Mug or Chocolate?"

	Preferred Exchange	p-Value for Fisher's Exact Test
Panel D. Trading Rates		
Pooled nondealers ($n = 129$)	.18 (.38)	$< .01$
Inexperienced consumers (< 6 trades monthly; $n = 74$)	.08 (.27)	$< .01$
Experienced consumers (≥ 6 trades monthly; $n = 55$)	.31 (.47)	$< .01$
Intense consumers (≥ 12 trades monthly; $n = 16$)	.56 (.51)	.64
Pooled dealers ($n = 62$)	.48 (.50)	.80

- Large endowment effect for inexperienced card dealers
- No endowment effect for experienced card dealers!
- Learning (or reference point formation) generalizes beyond original domain

5 Methodology: Effect of Experience

- Effect of experience is debated topic
- Does Experience eliminate behavioral biases?
- Argument for 'irrelevance' of Psychology and Economics
- Opportunities for learning:
  - Getting feedback from expert agents
  - Learning from past (own) experiences
  - Incentives for agents to provide advice
- This will drive away 'biases'

- However, four arguments to contrary:

  1. Feedback is often infrequent (house purchases) and noisy (financial investments) –> Slow convergence

  2. Feedback can exacerbate biases for non-standard agents:

     – Ego-utility (Koszegi, 2001): Do not want to learn

     – Learn on the wrong parameter

     – See Haigh and List (2004) below

3. No incentives for Experienced agents to provide advice
   - Exploit naives instead
   - Behavioral IO –> DellaVigna-Malmendier (2004) and Gabaix-Laibson (2006)

4. No learning on preferences:
   - Social Preferences or Self-control are non un-learnt
   - Preference features as much as taste for Italian red cars (undeniable)

- Empirically, four instances:

- **Case 1. Endowment Effect**. List (2003 and 2004)
  - Trading experience –> Less Endowment Effect
  - Effect applies across goods
  - Interpretations:
    * Loss aversion can be un-learnt
    * Experience leads to update reference point –> Expect to trade

- **Case 2. Nash Eq. in Zero-Sum Games.**

- Palacios-Huerta-Volij (2006): Soccer players practice –> Better Nash play

- Idea: Penalty kicks are practice for zero-sum game play

$1\backslash 2$	A	B
A	.60	.95
B	.90	.70

- How close are players to the Nash mixed strategies?

- Compare professional (2nd League) players and college students – 150 repetitions

Table E - Summary Statistics in Penalty Kick's Experiment

		Equilibrium	Professional Soccer Players	College Students: Soccer Experience	College Students: No Soccer Experience
I. Aggregate Data					
Row Player frequencies	*L*	0.363	0.333	0.392	0.401
	R	0.636	0.667	0.608	0.599
Column Player frequencies	*L*	0.454	0.462	0.419	0.397
	R	0.545	0.538	0.581	0.603
Row Player Win percentage		0.7909	0.7947	0.7927	0.7877
(std. deviation)		(0.0074)			
II. Number of Individual Rejections of Minimax Model at 5 (10) percent					
Row Player (All Cards)		1 (2)	0 (1)	1 (3)	2 (3)
Column Player (All Cards)		1 (2)	1 (2)	2 (2)	3 (10)
Both Players (All Cards)		1 (2)	1 (1)	1 (3)	3 (9)
All Cards		4 (8)	4 (7)	9 (12)	12 (20)

- Surprisingly close on average

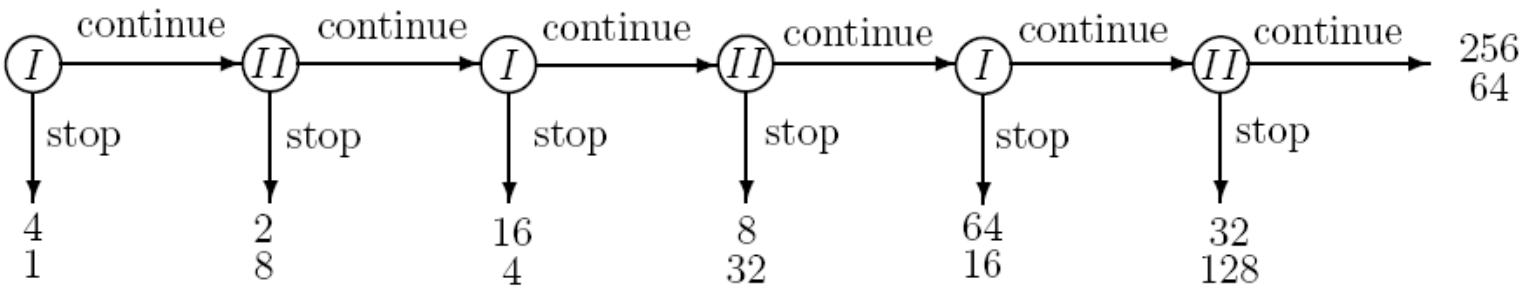
- More deviations for students –> Experience helps (though people surprisingly good)

- However: Levitt-List-Reley (2007): Replicate in the US
  - Soccer and Poker players, 150 repetition
  - No better at Nash Play than students

- Maybe hard to test given that even students are remarkably good

- **Case 3. Backward Induction.** Palacios-Huerta-Volij (2007)

- Play in centipede game



- – Optimal strategy (by backward induction) –> Exit immediately

  – Continue if:

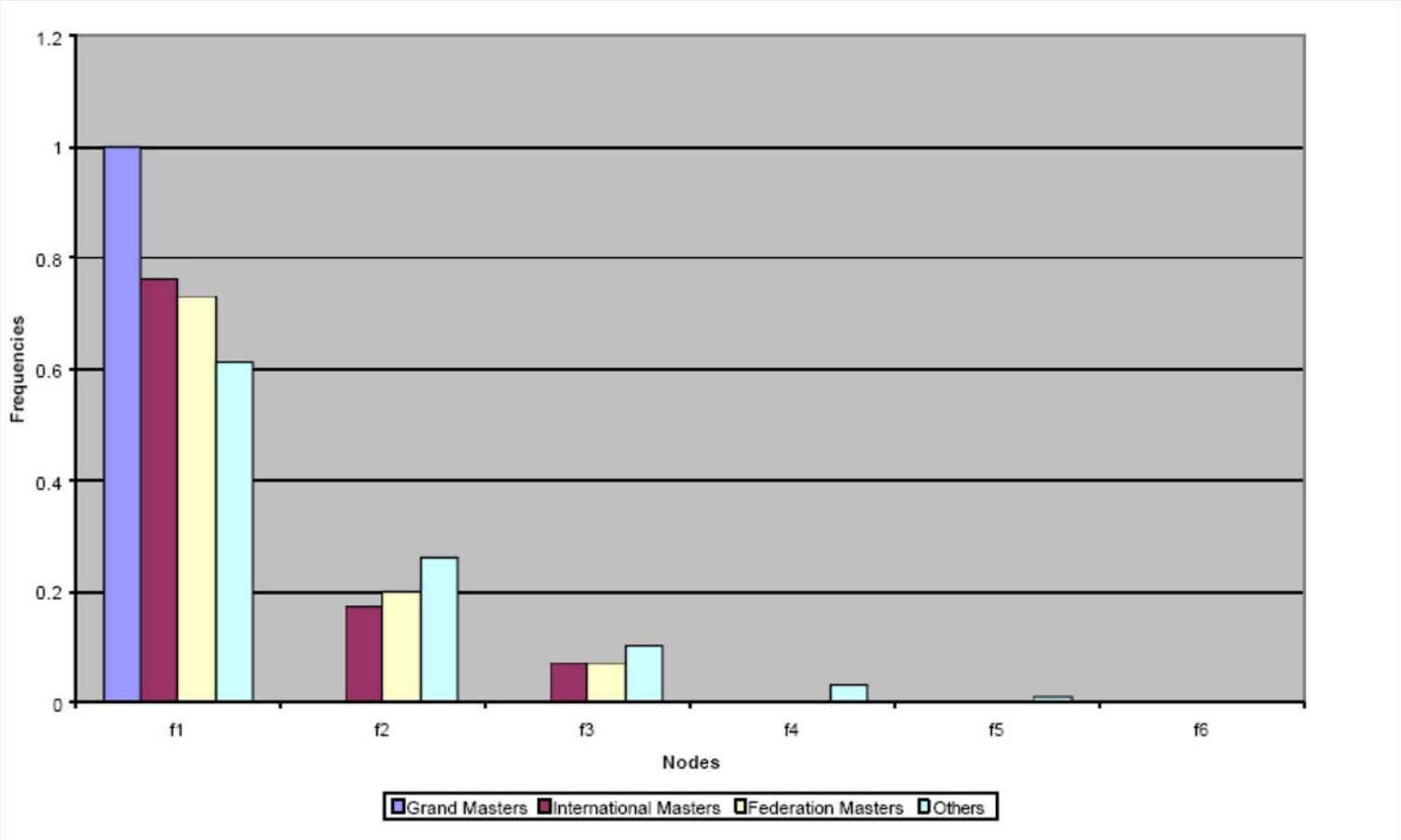
    * No induction

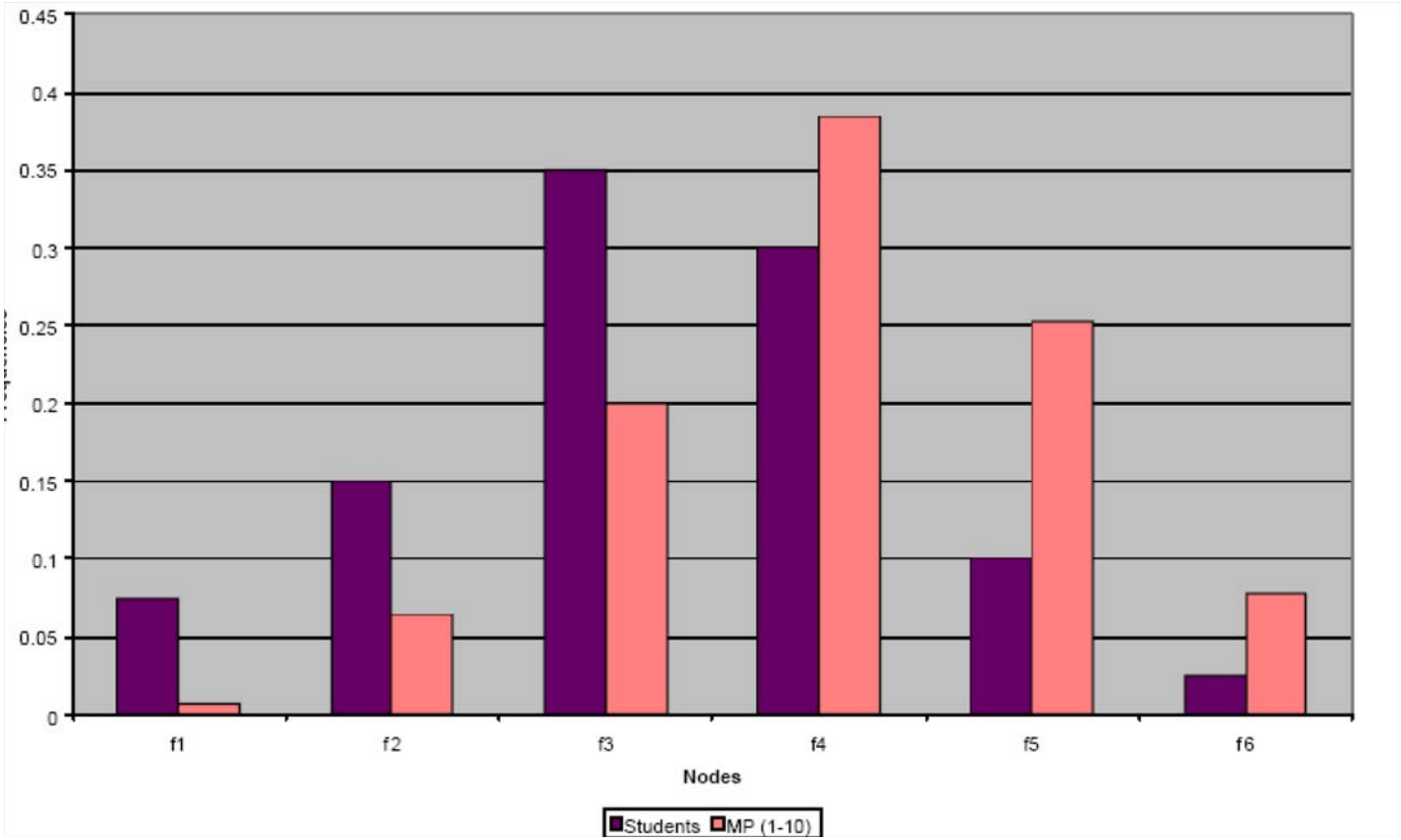
    * Higher altruism

- Test of backward induction: Take Chess players
  - 211 pairs of chess players at Chess Tournament
  - Randomly matched, anonymity
  - 40 college students
  - Games with SMS messages

- Results:
  - Chess Players end sooner

– More so the more experience




0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
f1
f2
f3
f4
f5
f6
Nodes
Students
MP (1-10)

- Interpretations:
  - Cognition: Better at backward induction
  - Preferences More selfish
- Open questions:
  - Who earned the hhigher payoffs? almost surely the students
  - What would happen if you mix groups and people know it?

- **Case 4. Myopic Loss Aversion.**

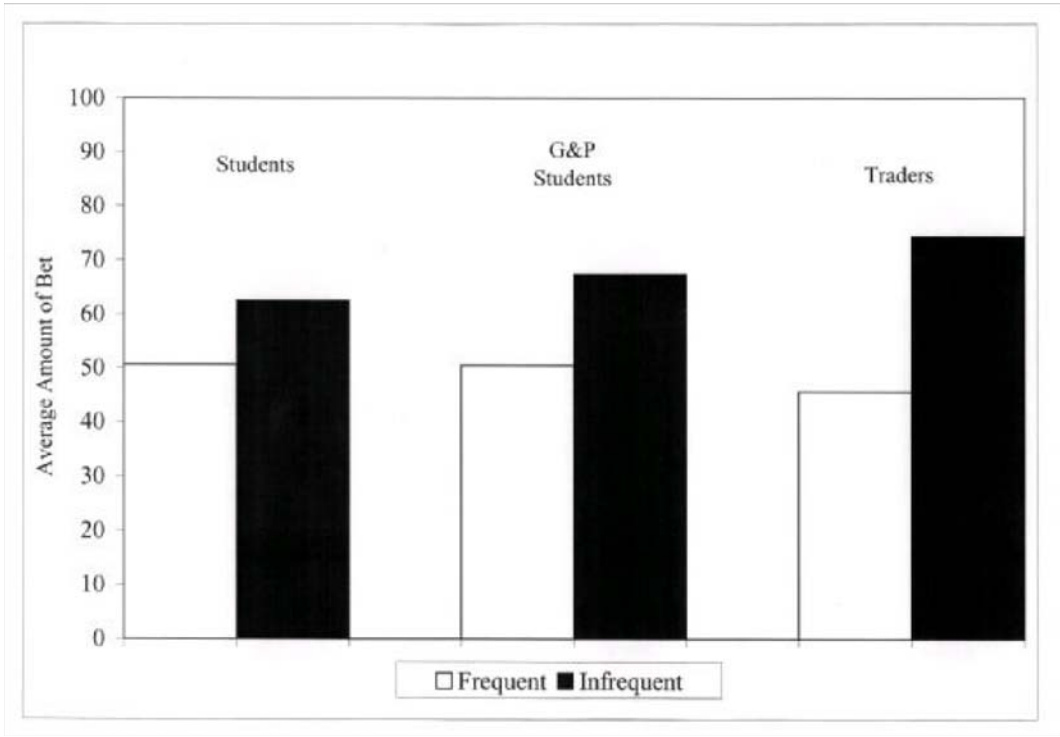
- Lottery: 2/3 chance to win 2.5X, 1/3 chance to lose X
  - Treatment F (Frequent): Make choice 9 times
  - Treatment I (Infrequent): Make choice 3 times in blocks of 3

- Standard theory: Essentially no difference between F and I

- Prospect Theory with Narrow Framing: More risk-taking when lotteries are chosen together —> Lower probability of a loss

- Gneezy-Potters (*QJE*, 1997): Strong evidence of myopic loss aversion with student population

- Haigh and List (2004): Replicate with
  - Students
  - Professional Traders –> *More* Myopic Loss Aversion



- Summary: Effect of Experience?
  - Can go either way
  - Open question

6 Next Lecture

- Reference-Dependent Preferences
  - Labor Supply
  - Insurance
  - Housing

- Problem Set 2 due next Wednesday