

EITM and (Incentivized) Experiments

Afternoon Session

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June 24, 2016

Outline

1. Some thoughts on EITM
2. Let's play!
3. Intro to \$\$\$ experiments
4. **Examples**

Outline of examples

- Cooperation in social dilemmas
- Strategic sophistication
- Risk preferences
- **Electoral accountability**
- **Gender and candidate emergence**

Electoral accountability

How well do elections serve as mechanisms of accountability?

Do elections induce politicians to act in the best interest of voters?

Traditional retrospective voting

- “Voters are not fools” – instead “rational god of vengeance and reward” (V.O. Key)
- Reward-punishment induces good behavior
- Strategy is credible when politicians are identical (Ferejohn 1986)

Rational retrospective voting

- Voters are forward-looking, use past to form prospective evaluations (Fiorina 1981; Mackuen, Erikson, Stimson 1992)
- Selection trumps sanctioning (Fearon 1998)
- Selection provides incentives to pander (Canes-Wrone et al 2001, Maskin and Tirole 2004, Fox 2007)
- Selection and sanctioning are sometimes consistent (Fox and Shotts 2009)

Overview of model

Version of Fox and Shotts (2009), similar to Canes-Wrone, Herron, and Shotts (2001), Canes-Wrone and Shotts (2007)

Incumbent politician

- Chooses policy
- Has policy expertise
- Privately informed about “type”

Voter

- Re-elects incumbent or elects challenger
- Observes policy and outcome, but not politician’s type
- Cares about policy outcomes before and after election

Sequence of events

1. Nature chooses the state of the world and politician's type

State is **A** or **B**, $\Pr(\text{State is A}) = 3/5$

Type is **Pragmatic** or **Ideological**, $\Pr(\text{Pragmatic}) = 1/3$

2. Politician observes type and signal, chooses policy

$\Pr(\text{Signal} = \text{State} \mid \text{State}) = 5/6$

3. Voter observes p , ω and votes for Incumbent or Challenger

Challengers drawn from same distribution as Incumbents

4. (Politician chooses post-election policy)

Politician payoffs

Pragmatists (office-seekers) prefer being re-elected

$$U_P(p, v, \omega) = \begin{cases} 100 & \text{if } v = I \\ 0 & \text{if } v = C \end{cases}$$

Ideologues (policy-seekers) prefer to choose policy B

$$U_P(p, v, \omega) = \begin{cases} 100 & \text{if } p = B \\ 0 & \text{if } p = A \end{cases}$$

Voter payoffs

Prefer policies that match the state before and after the election

$$U_V(p, \omega, t'(v)) = u_V^1(p, \omega) + u_V^2(t'(v))$$

$$u_v^1(p, \omega) = \begin{cases} 300 & \text{if } p = \omega \\ 0 & \text{if } p \neq \omega \end{cases}$$

$$u_v^2(t'(v)) = \begin{cases} \frac{5}{6}(300) = 250 & \text{if } t' = P \\ \frac{2}{5}(300) = 120 & \text{if } t' = I \end{cases}$$

Election Stage

In this round, you are a voter. The politician has observed some information about the best policy (which may or may not have been noisy) and has made a choice. The policy that was actually best and the politician's choice are shown below. After reviewing this information, click on one of the two buttons below to indicate whether to re-elect the politician or to elect the challenger.

The best policy in this round is: A

The politician chose policy: B

Do you want to re-elect the politician or elect the challenger?

☐ Re-elect politician
☐ Elect challenger

Continue

Voting screen from experiment

Sanctioning

- Suppose voters use a “retrospective” strategy:
Re-elect the incumbent if and only if $p = \omega$
- Pragmatic incumbents maximize probability of re-election by following signals
- Sanctioning induces politicians to utilize their expertise
- Is this equilibrium behavior?

Analysis of voter's problem

Pragmatic types **use expertise**: follow signals

Ideological types always choose B

Policy	State	Posterior belief (pragmatic type)	Vote choice
A	A		
A	B		
B	A		
B	B		

Analysis of voter's problem

Pragmatic types **use expertise**: follow signals

Ideological types always choose B

Policy	State	Posterior belief (pragmatic type)	Vote choice
A	A	100%	Incumbent
A	B	100%	Incumbent
B	A	8% < 33% (prior)	Challenger
B	B	29% < 33% (prior)	Challenger

Analysis of voter's problem

Pragmatic types **pander**: always choose A

Ideological types always choose B

Policy	State	Posterior belief (pragmatic type)	Vote choice
A	A		
A	B		
B	A		
B	B		

Perfect Bayesian equilibrium

Pragmatic types **pander**: always choose A

Ideological types always choose B

Policy	State	Posterior belief (pragmatic type)	Vote choice
A	A	100%	Incumbent
A	B	100%	Incumbent
B	A	0%	Challenger
B	B	0%	Challenger

Selection undermines sanctioning

- Forward-looking voters are uncertain about politicians' types
⇒ need to “select good types” guides behavior
- Information about the past is only relevant for updating beliefs about the incumbent's type
- “Sanctioning poor performance” (retrospective voting) is not sequentially rational
- Politicians have no incentives to utilize their expertise!

The incumbent chose policy A and the state was A. How will you vote?



When poll is active, respond at **PollEv.com/jwoon**



Text **JWOON** to **37607** once to join



Answers to this poll are anonymous

Incumbent

56%

Challenger


44%

0% 10% 20% 30% 40%

The incumbent chose policy A and the state was B. How will you vote?

 When poll is active, respond at **PollEv.com/jwoon**

 Text **JWOON** to **37607** once to join

 Answers to this poll are anonymous

Incumbent

40%

Challenger

60%

0% 10% 20% 30% 40%

The incumbent chose policy B and the state was A. How will you vote?



When poll is active, respond at **PollEv.com/jwoon**



Text **JWOON** to **37607** once to join



Answers to this poll are anonymous

Incumbent

35%

Challenger

65%

0% 15% 30% 45%

The incumbent chose policy B and the state was B. How will you vote?



When poll is active, respond at **PollEv.com/jwoon**



Text **JWOON** to **37607** once to join



Answers to this poll are anonymous

Incumbent

65%


Challenger

35%

0% 15% 30% 45%

Baseline experiment (Woon 2012b)

Politician attributes

- Motivation: Office or Policy
 - Preference: Pragmatic or Ideological
 - Quality: Perfect or Noisy
- 
- $2^3 = 8$ types

Delegate (pandering) PBE

- Office-motivated politicians pander
- Voters re-elect based on policy choice

Trustee (expertise) PBE

- Office-motivated politicians follow signals
- Voters re-elect based on outcomes

Experimental procedures

- Pittsburgh Experimental Economics Lab, used z-tree
- Five sessions (88 subjects total)
 - Three with unique delegate PBE
 - Two with both delegate and trustee PBE
- Political context (“politicians”, “voters”)
- Subjects play both roles
 - 36 rounds
 - Anonymous, random matching
- Payoffs denominated in “tokens”
 - \$0.00 or \$0.50 for politicians/round
 - \$0.20-\$1.00 for voters/round
 - Total earnings \$15.85 to \$24.35, avg = \$21.68 (includes \$5 show-up)

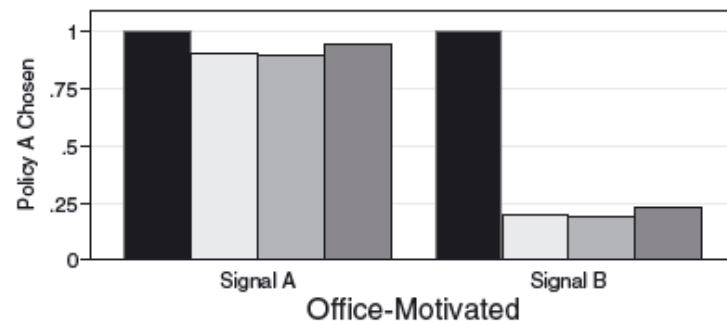
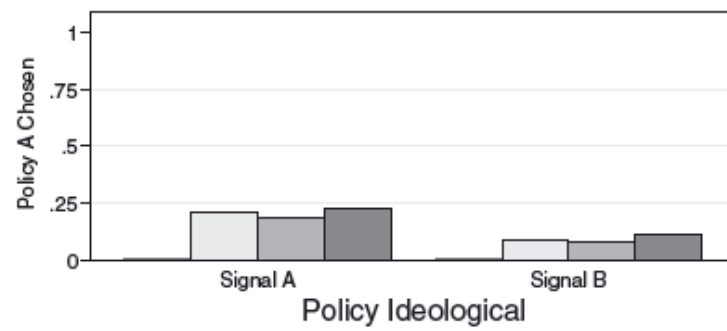
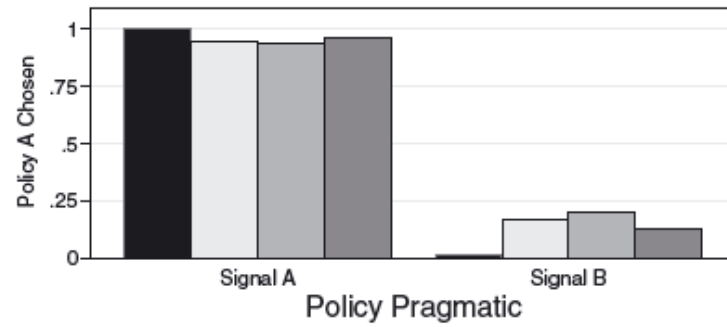
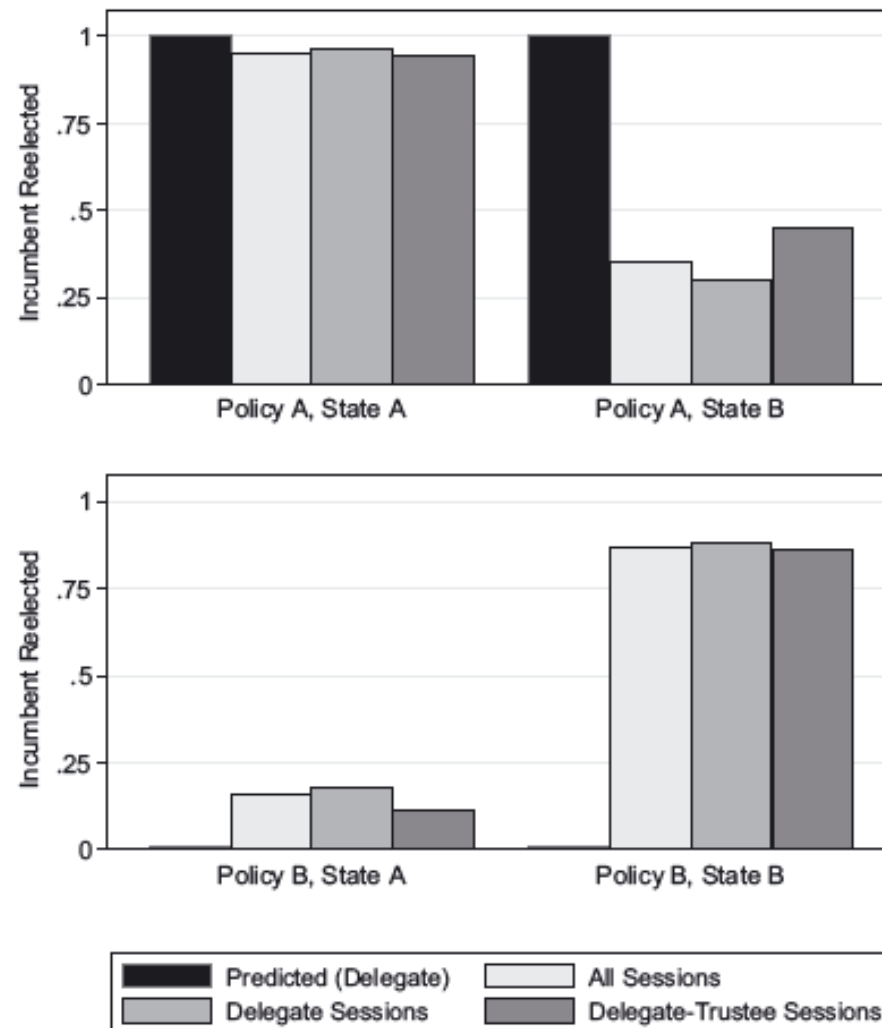


FIGURE 2 Voter Behavior



Learning?

Voters									
		Delegate Sessions				Delegate-Trustee Sessions			
		Policy A State A	Policy A State B	Policy B State A	Policy B State B	Policy A State A	Policy A State B	Policy B State A	Policy B State B
	Prediction	Increase	Increase	Decrease	Decrease	Increase	—	Decrease	—
Initial period	Reelection	98%	24%	14%	89%	97%	43%	3%	94%
	N	56	54	56	56	32	28	31	32
Later periods	Reelection	96%	34%	19%	87%	93%	47%	14%	85%
	N	303	91	185	207	212	38	80	123
Difference test	p-value	0.81	0.10	0.81	0.35	0.78	0.72	0.95	0.18
Time trend	Coefficient	−0.04	0.11	0.07	0.08	0.02	0.01	−0.07	−0.20
	Standard error	(0.05)	(0.08)	(0.05)	(0.06)	(0.05)	(0.15)	(0.11)	(0.07)

Notes: Where predictions are given, p-values are for one-tailed tests. Otherwise, tests are two-tailed. The time trend is the coefficient estimate in a probit model with the number of periods the information set was played as the independent variable.

Results of baseline experiment

Player/Type	Observed behavior	Equilibrium behavior?	Best response?
PP Politicians	Followed signals	Y	-
PI Politicians	Policy B	Y	-
Off. Politicians	Followed signals	N*	Y
Voters	Outcome-based rule	N*	N

Searching for facts

- Use additional “treatments” (modified games) to try to isolate cause(s) of non-equilibrium behavior
- *Cognitive complexity hypothesis*
Bayesian inference and expected utility maximization too difficult, so voters rely on shortcuts and heuristics
- *Accountability hypothesis*
Voters use a retrospective voting rule in order to purposefully induce politicians to use their information
- Modify games to predict same pandering/selection equilibrium (null hypothesis) but different behavior if proposed behavioral hypothesis is true

Additional treatments

Treatment	Rationale
Information choice, Policy information	Do voters use irrelevant information?
Simplified type	Do voters make better inferences when the problem is “easier”?
Forward payoff	What if incentives for accountability are removed?

Information choice and Policy information treatments

Do voters use available information even if it is irrelevant?

Modification

- Voters initially observe only the policy choice (PI)
- May observe the true state by paying a small cost (IC)
- Conditional on observing the state, voter's inference and choice problems are same as baseline (sequentially rational voters will not purchase info)

Prediction

If voters condition on available information, voters who do not purchase information will be more likely to use a policy-based voting rule

**TABLE 2 Policy Information and Information
Choice Treatments**

	Incumbent Reelected			
	Policy A		Policy B	
	Pct Reelection	p-value	Pct Reelection	p-value
Baseline	80% (880)	—	55% (770)	—
Policy Information	85% (379)	0.02	42% (233)	<0.01
Information Choice	89% (227)	<0.01	52% (160)	0.26

Notes: N in parentheses; p-values for one-tailed t-tests of differences from baseline.

Simplified type treatment

Do voters make better inferences when the problem is cognitively “easier”?

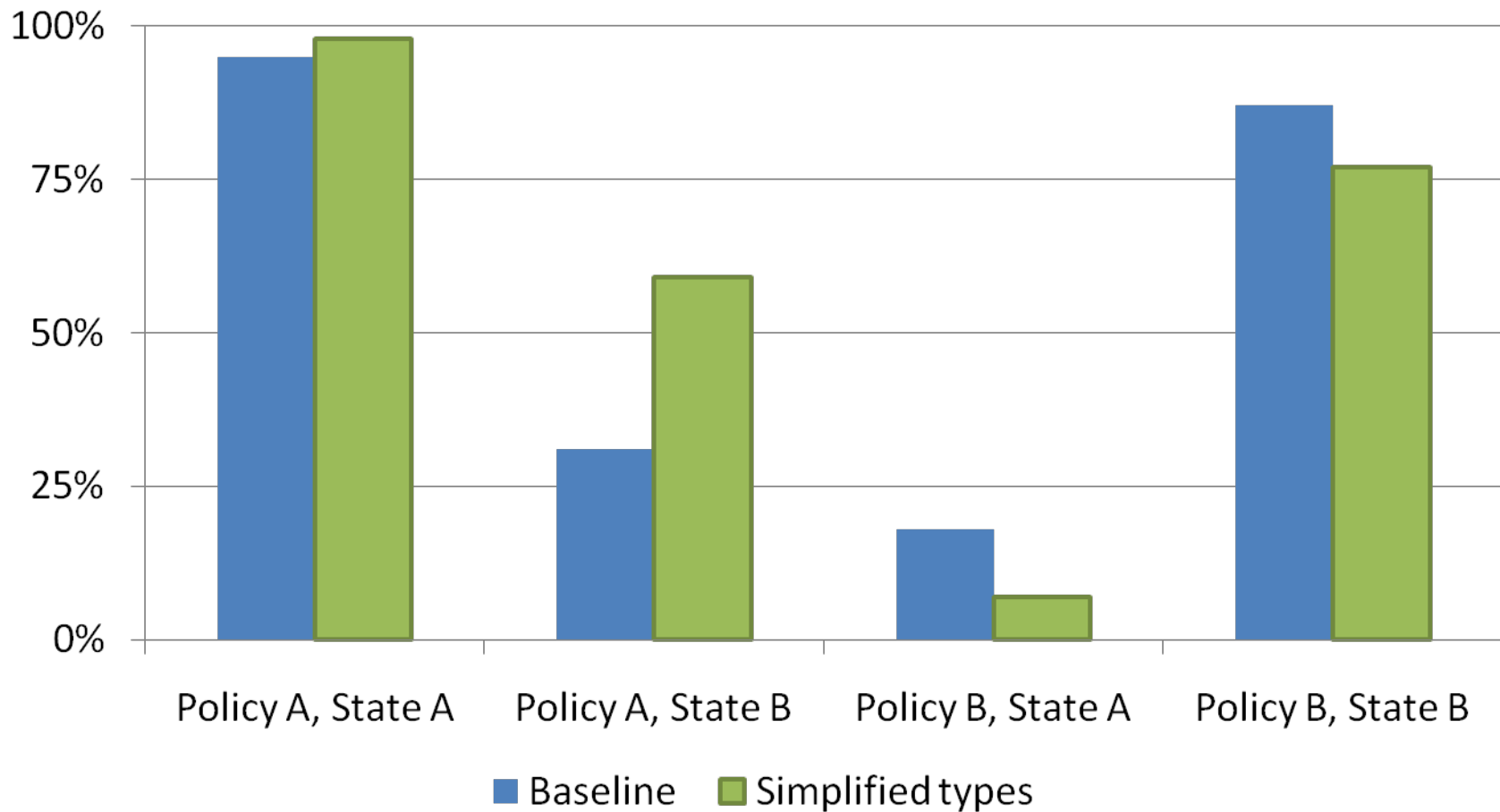
Modification

- Two politician types instead of 8
- Same as demonstration scenario
- Bayes’ Rule can be applied qualitatively (without computing probability weights)

Prediction

If the numerical application of Bayes’ Rule is a source of non-equilibrium behavior, voters will be more likely to use a policy-based voting rule

Simplified type treatment



Forward payoff treatment

Do voters use retrospective voting to ensure politicians use their expertise?

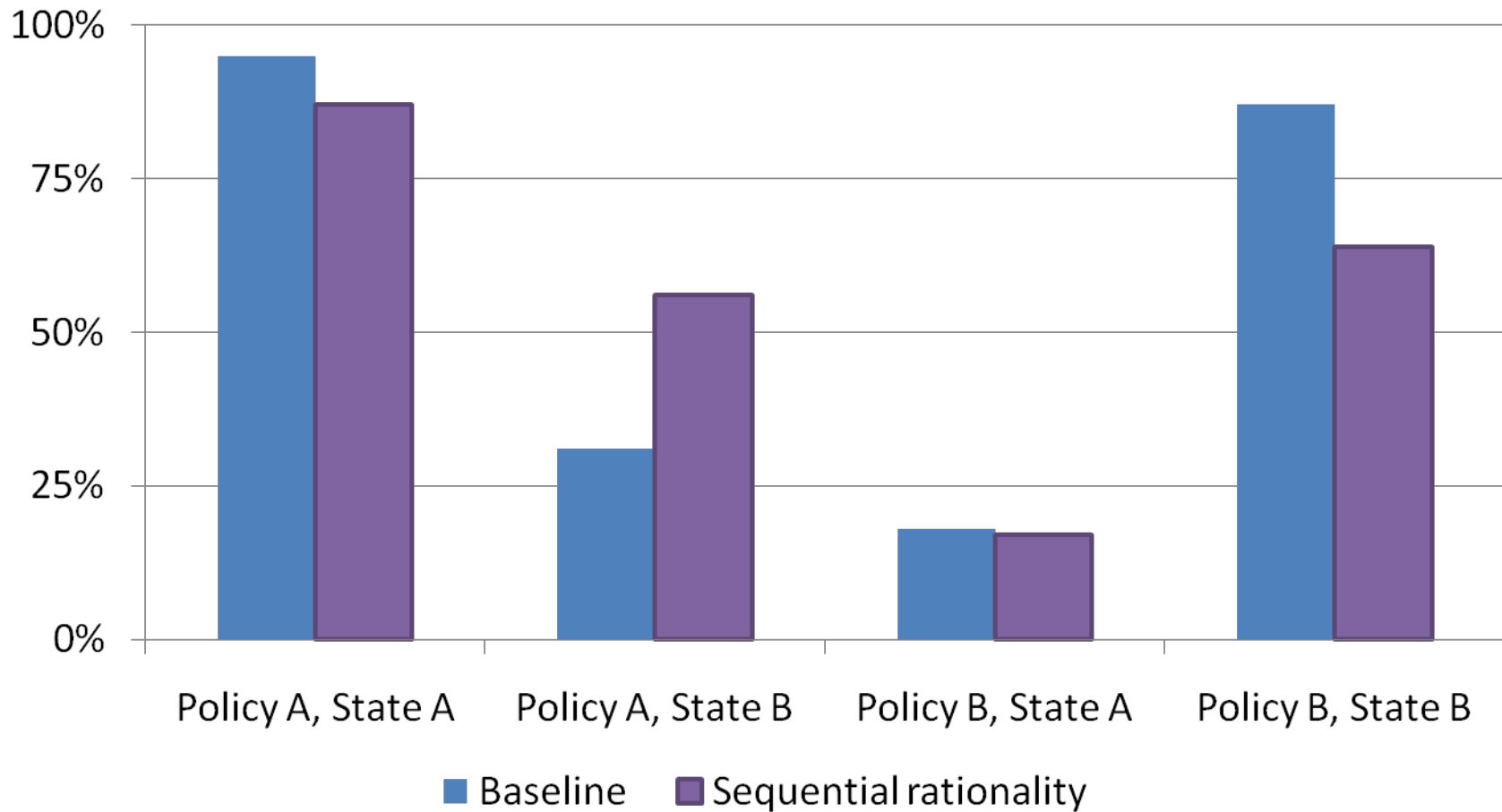
Modification

- Voters' payoffs do not depend on incumbent's policy choice, only on type of politician re-elected
- Strategic incentives are identical to baseline game
- Modified payoffs force voters to be forward-looking

Prediction

Voters will be more likely to use a policy-based voting rule

Forward payoff treatment



Summary of additional treatments

- Information choice
 - Voters who did not purchase info were more likely to re-elect if $p = A$ than if $p = B$
 - But the re-election rate when $p = B$ was high
- Simplified type
 - Voters were more likely to re-elect when $p = A$ and $\omega = B$
 - But other re-election rates didn't change much
- Forward payoff
 - Voters were more likely to re-elect when $p = A$ and $\omega = B$, and less likely to re-elect when $p = B$ and $\omega = B$
 - But no within-treatment difference between re-election when $\omega = B$

Conclusions

- Falsified theoretical predictions: *Traditional retrospective voting is a strong behavioral tendency* (i.e., outcome based) even when it is inconsistent with (sequential, Bayesian) rationality
- However, behavior as politicians is *rational* and *strategic* – it is simpler and does not require inference
- Searching for facts, testing cause of theory failure: Additional treatments provide evidence for some form(s) of *bounded rationality* (simple punishment-reward heuristic)

~~“Rational god of vengeance and reward”~~



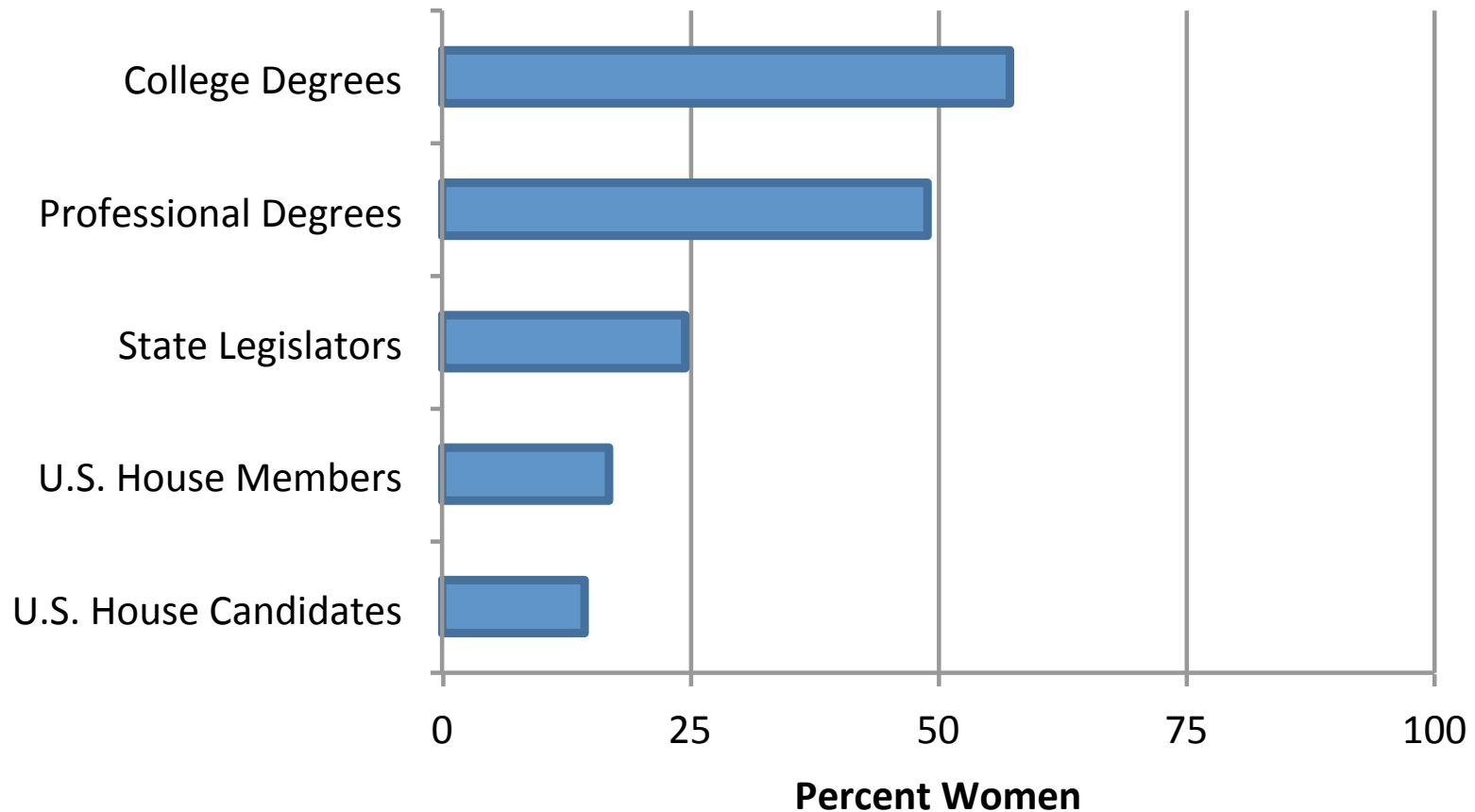
Gender gap in representation



Women Are the Only Adults Left in Washington

With the federal government at shutdown's door, the 20 female Senate members are setting new standards for civility and bipartisanship. Look out, old boys' club

Due to gender gap in candidates



Unobserved preferences?

- Kanthak and Woon (2015): Do men and women make different decisions about entering electoral competition?
- Key features:
 - Real effort task = Quality of representative
 - Groups select representatives, vary rules and incentives

Experimental control

- Create level playing field: men and women have equal average ability
- Private information about relative ability: potential for under-confidence
- Manipulate institutions: vary relevance of elections
- Measure potential confounds: beliefs and risk preferences

Overview of experiment

Part 1 Real effort task

Part 2 Volunteer

Part 3 Election

Part 4 Belief task

Part 5 Risk task

		Campaign	
		Chat	Truth
Costs and benefits of entry	With	<i>CCB</i>	<i>TCB</i>
	Without	<i>CNO</i>	<i>TNO</i>

Part 1: Addition Task

- Niederle and Vesterlund (2007) use to measure gender differences in competition preferences

					The Sum	
43	29	44	23	73	<input type="text"/>	
Click the button to submit your sum						
						<input type="submit" value="Submit"/>

- 5 minutes to complete as many sums as possible
- Piece rate payment (\$0.75 per correct answer)
- Results are private information

Part 2: Group representation

- Randomly divided into groups of 5
- **Choose to volunteer or not**
- Representative randomly selected from set of volunteers
- Repeat addition task
- Payoffs: \$0.50 per rep. sum + \$0.25 own sum
- CB conditions: \$2 bonus for winning, \$1 entry fee

Part 3: Election

- Choose to run as candidate or not
- Election by plurality rule, random tie-breaker
- Chat: Simultaneously send text “campaign message”
- Truth: No message, voters see Part 1 scores
- Repeat addition task
- Payoffs: \$0.50 per rep. sum + \$0.25 own sum
- CB conditions: \$2 bonus for winning, \$1 entry fee

Part 4: Estimation (belief elicitation)

- Guess Part 1 score, Part 2 volunteer decision, Part 3 candidate decision for every other group member (by rank)

$$\begin{aligned} \text{Reward} = & \left\{ \begin{array}{ll} \$10 & \text{if guess} = \text{score} \\ \frac{\$5}{|\text{guess} - \text{score}|} & \text{if guess} \neq \text{score} \end{array} \right\} \\ & + \$5 \text{ if Part 2 guess correct} \\ & + \$5 \text{ if Part 3 guess correct} \end{aligned}$$

- One set of guesses randomly selected for payment

Part 4: Estimation (belief elicitation)

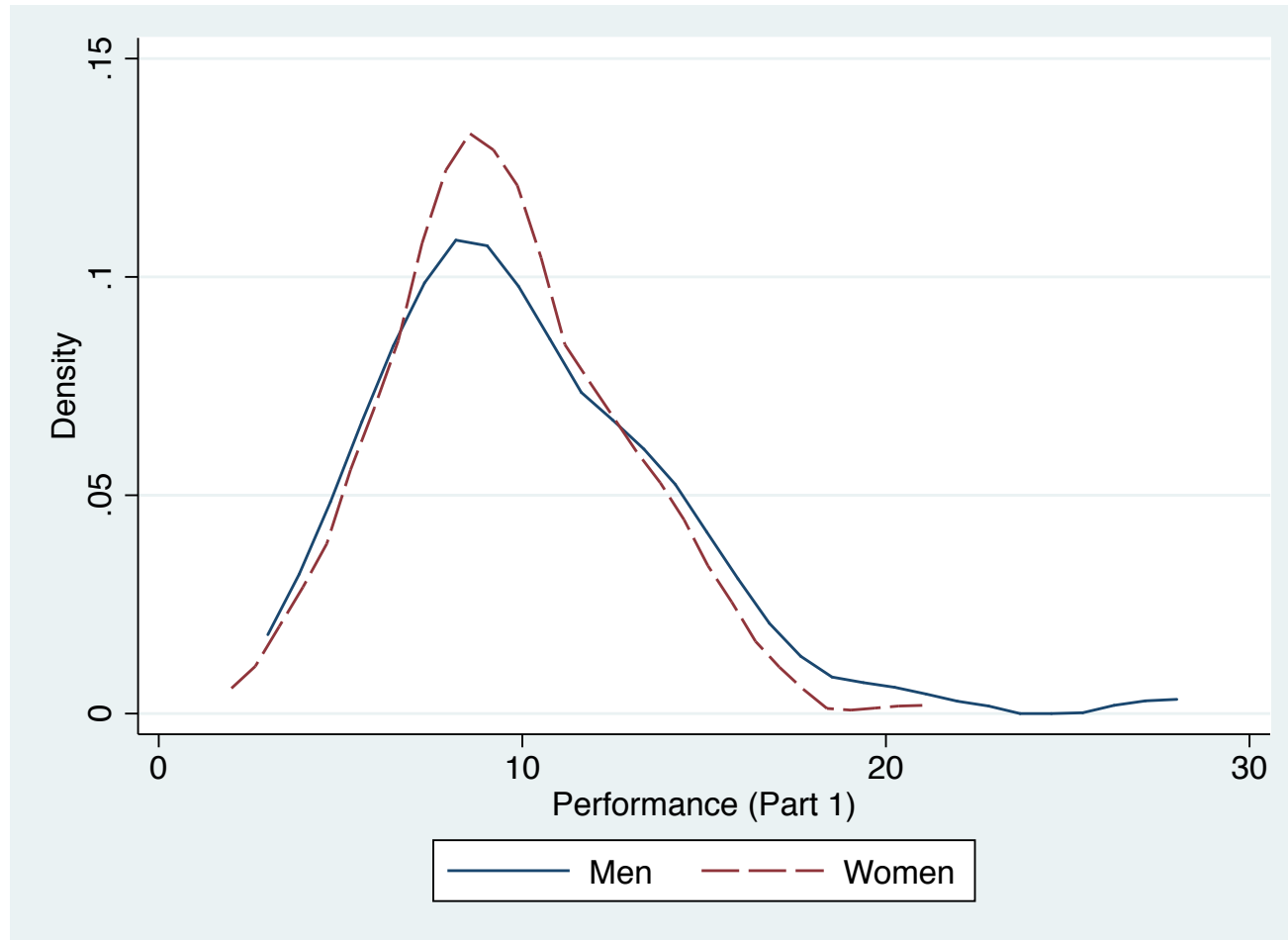
	Part 1 Number of correct sums	Part 2 Decision Willing to be considered for representative?	Part 3 Decision Willing to be a candidate?
Highest	<input type="text"/>	<input type="checkbox"/> Willing	<input type="checkbox"/> Candidate
2nd highest	<input type="text"/>	<input type="checkbox"/> Willing	<input type="checkbox"/> Candidate
3rd highest	<input type="text"/>	<input type="checkbox"/> Willing	<input type="checkbox"/> Candidate
Lowest	<input type="text"/>	<input type="checkbox"/> Willing	<input type="checkbox"/> Candidate

Part 5: Lottery choice (risk elicitation)

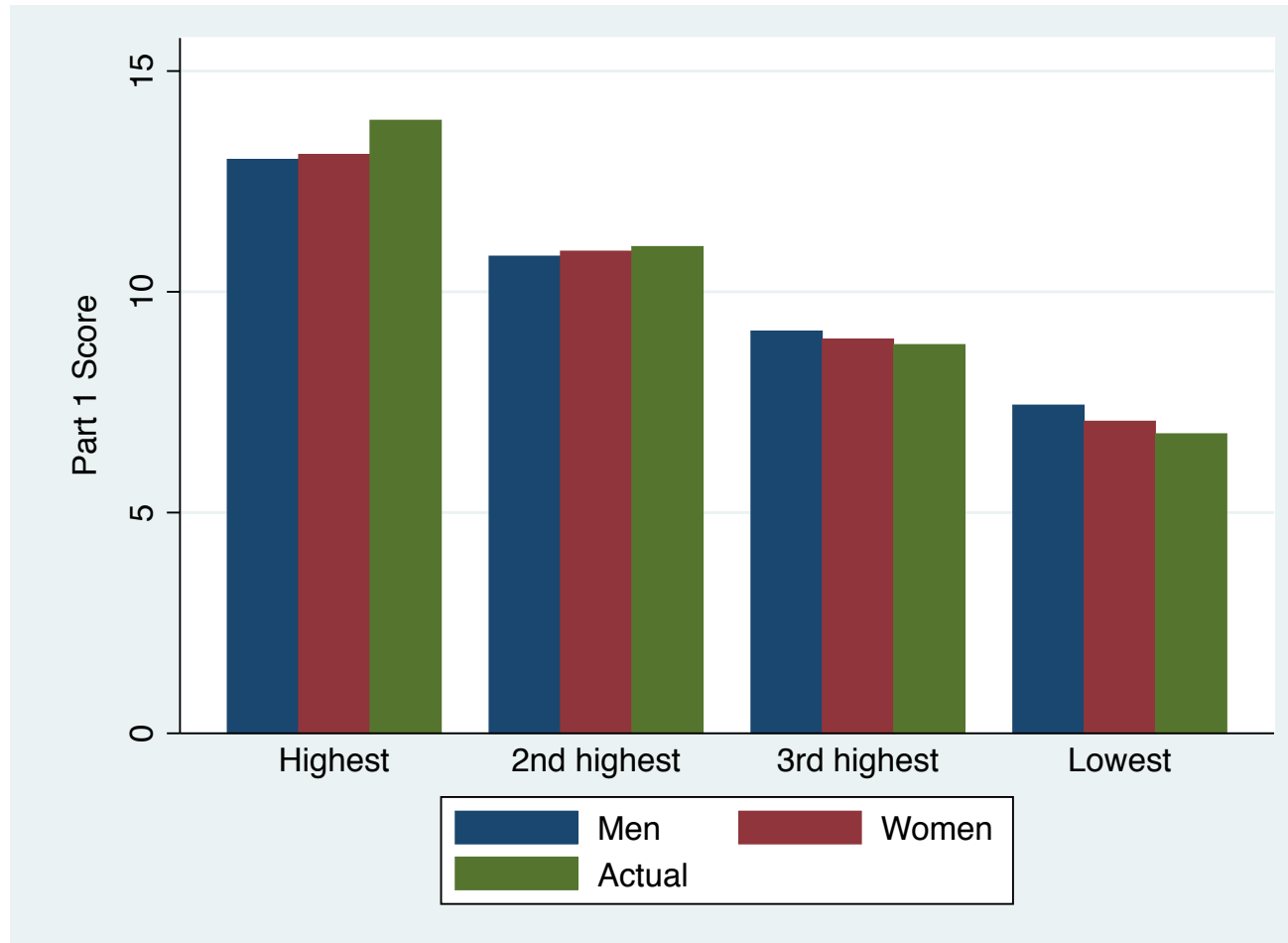
Chance	Option A		Option B		
	1/2	1/2	1/3	1/3	1/3
Choice 1	\$3.00	\$8.00	\$3.00	\$7.50	\$8.00
Choice 2	\$3.50	\$8.50	\$3.50	\$7.50	\$8.50
Choice 3	\$4.00	\$9.00	\$4.00	\$7.50	\$9.00
Choice 4	\$4.50	\$9.50	\$4.50	\$7.50	\$9.50
Choice 5	\$5.00	\$10.00	\$5.00	\$7.50	\$10.00
Choice 6	\$5.50	\$10.50	\$5.50	\$7.50	\$10.50
Choice 7	\$6.00	\$11.00	\$6.00	\$7.50	\$11.00
Choice 8	\$6.50	\$11.50	\$6.50	\$7.50	\$11.50
Choice 9	\$7.00	\$12.00	\$7.00	\$7.50	\$12.00

Based on Holt and Laury (2002)

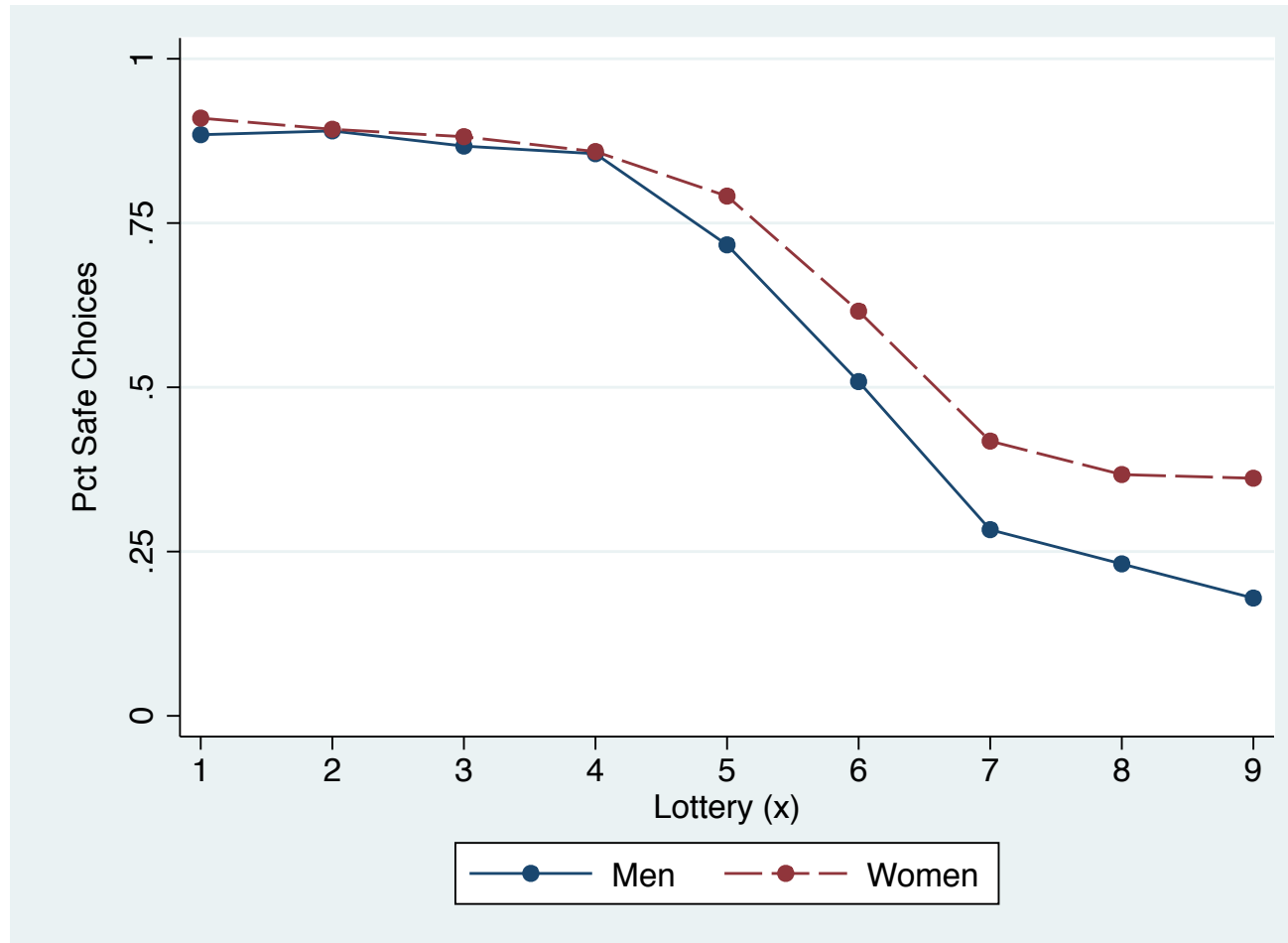
Task performance



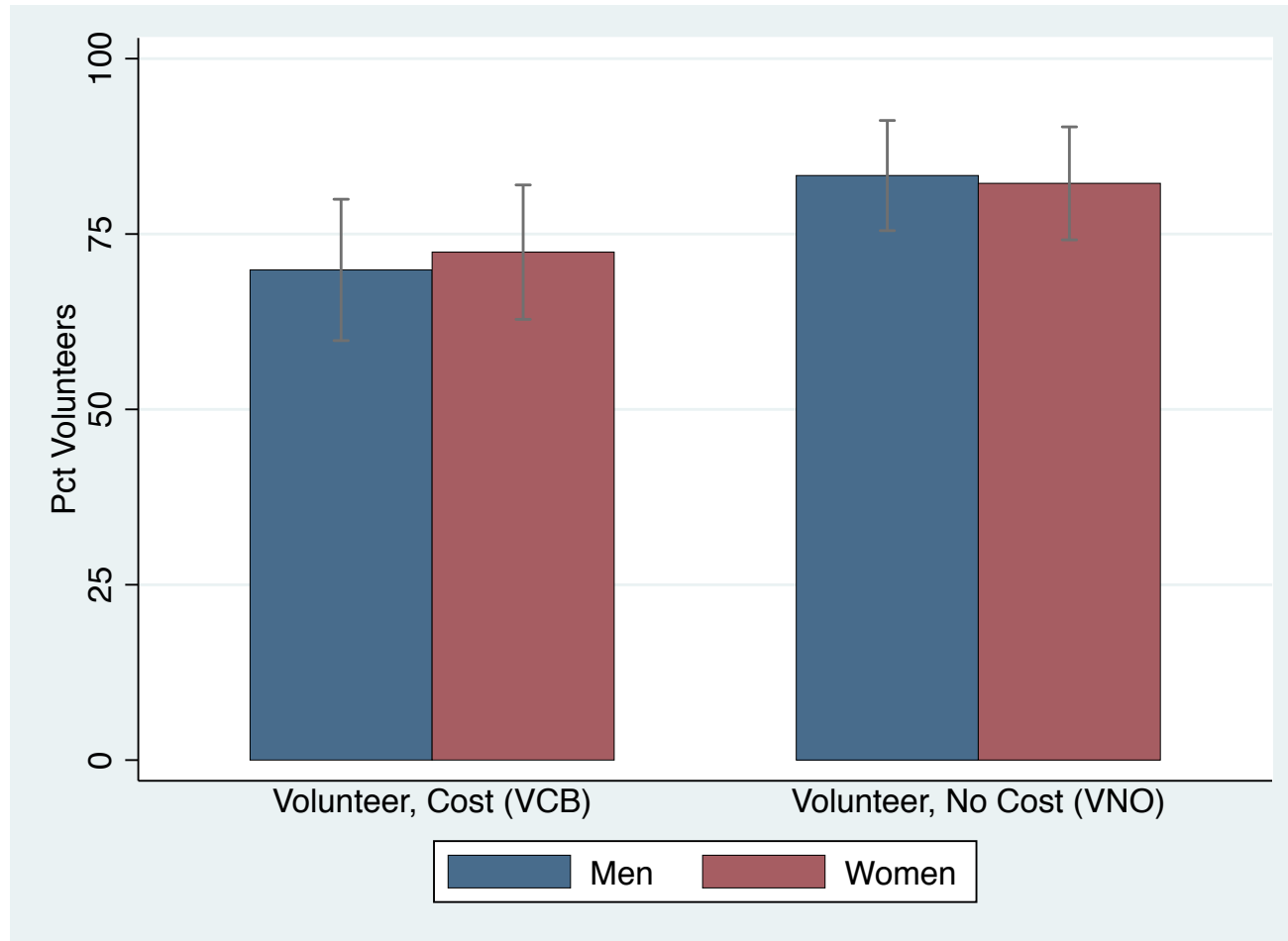
Beliefs



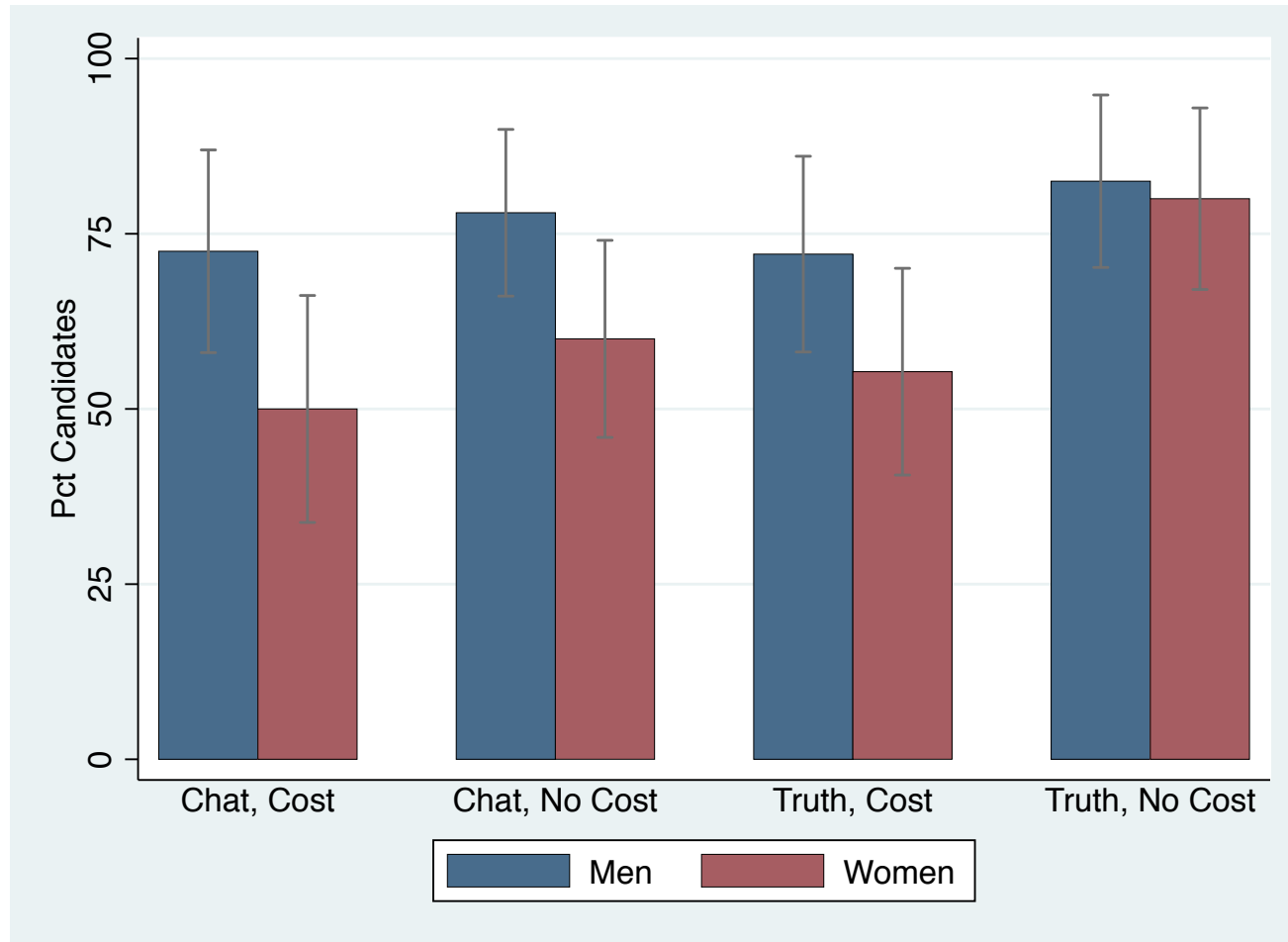
Risk preferences



Volunteer (no election)



Candidates (election)



Probit regressions

	Men		Women	
Score	0.16**	0.36**	0.12**	.25**
Volunteer Cost	-0.38*	-0.24	-0.39*	-0.39*
Election Chat-Cost	-0.21	-0.04	-1.03**	-0.90**
Election Chat-No Cost	-0.33	-0.16	-0.71**	-0.57**
Election Truth-Cost	-0.39	-0.11	-0.85**	-0.64**
Election Truth-No Cost	0.08	0.26	-0.16	-0.10
Safe Choices		-0.07		-0.08*
Believed Number Others		0.34**		0.51**
Believed Average Score		-0.26**		-0.18**
Constant	1.04**	3.48**	1.05**	2.41**
Log likelihood	-162.01	-135.9	-193.85	-157.71
N	346	346	354	354

* p < 0.10, ** p < 0.05

Election aversion

- Women enter less than men in election context, even controlling for ability, risk aversion, beliefs
- Experimental control is crucial for discovering this behavioral phenomenon, ruling out alternative explanations

Wrapping up: Models and experiments

- Control is essential for theory testing, making inferences about preferences and behavior
- Identify conditions where standard theory works and where it doesn't
- Behavioral game theory and bounded rationality
 - New models of social preferences, non-material incentives
 - Beliefs, limited strategic thinking, learning characterize short- and medium-term behavior

So you want to do an experiment?

- What model of behavior do you want to test? What behavior do you want to measure?
- Think like a theorist: Can you create a simple model or environment?
- Think like an experimentalist: What do you need to control? What do you need to manipulate?

So you want to do an experiment?

- What model of behavior do you want to test? What behavior do you want to measure?
- Think like a theorist: Can you create a simple model or environment?
- Think like an experimentalist: What do you need to control? What do you need to manipulate?

Typical process

- Select game, design choice task
- Write instructions, program software
- Pilot and test on friends, family, grad students
- **Institutional Review Board (IRB) approval (very important!)**
- Run pilot sessions, fine-tune procedures and design
- Run sessions, collect data
- Present, write, and publish results

Some advice

- Handbooks are good places to start (Kagel and Roth 1995, Camerer 2003, Morton and Williams 2010, Druckman et al 2011)
- Read, borrow, adapt instructions from published experiments
- Try to think like a naive subject (not a theorist or statistician): can you understand the instructions?

Concluding thoughts

- Incentivized experiments are ideal for making controlled comparisons and for studying decision-making and behavior consistent with the EITM perspective
- Just as theoretical models trade generality for analytic value, experiments rely on control and artificiality to ensure a tight connection between theoretical models and data

Thanks!

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