Political Identity and Conjunction Fallacy: Experimental Evidence from the 2024 U.S. Presidential Election

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A Thought Experiment

- Imagine you are a Democrat. Two days before the 2024 U.S. presidential election, you are evaluating two lotteries:
    1. If Harris wins the election, you receive $100; otherwise, you receive $0.
    2. If Harris wins the election, and the U.S. unemployment rate decreases from September 2024 to September 2025, you receive $100; otherwise, you receive $0
- Which lottery do you prefer to bet on?

A Thought Experiment

- Imagine you are a Democrat. Two days before the 2024 U.S. presidential election, you are evaluating two lotteries:
    1. If Trump wins the election, you receive $100; otherwise, you receive $0.
    2. If Trump wins the election, and the U.S. unemployment rate decreases from September 2024 to September 2025, you receive $100; otherwise, you receive $0
- Which lottery do you prefer to bet on?

Conjunction Fallacy in Beliefs

- A health survey was conducted in a representative sample of adult males in British Columbia of all ages and occupations. Mr. F. was included in the sample. He was selected by chance from the list of participants. Which of the following statements is more probable?

  1. Mr. F. has had one or more heart attacks.
  2. Mr. F. is over 55 years old, and he has had one or more heart attacks.

This Study

- We examine the effect of political identity on choices and beliefs towards joint events, in particular, the conjunction fallacy
  - Political identity shapes choices and beliefs in the increasingly polarized world (e.g., Allcott et al., 2020; Bauer et al., 2024)
  - Conjunction fallacy in beliefs (Tversky and Kahneman, 1974; 1983)
- In the 2024 U.S. presidential election context, we measure individual choices and beliefs for combined events of upcoming election outcomes and economic conditions a year later, and single events when considered separately.

This study

- We observe
  1. Conjunction fallacy in choices: bets on joint events are preferred to bets on one of the single events in congruent scenarios—for the democrats, whereby a Harris victory coincides with favorable economic conditions and a Trump victory coincides with unfavorable economic conditions.
  2. Conjunction fallacy in beliefs: probability on joint events are larger than that of one of the single events in congruent scenarios.
  3. Conjunction fallacy in choices partially links to that in beliefs and partially due to preferences.

Experimental Design

Decision Task

- Single event lottery
  - Election outcome: Trump/Harris wins election
  - Economic outcome 1: U.S. unemployment rate increases/decreases from Sep. 2024 (4.1%) to Sep. 2025
  - Economic outcome 2: U.S. public health care system ranking improves/declines from Sep. 2024 (3rd) to Sep. 2025
- Joint event lottery: Bets on election outcome and economic outcome
  - E.g., Trump wins and unemployment increases
- Choice elicitation tasks: 14 choice lists (2 for election outcome, 4 for economic outcome, 8 for joint events)
- Belief elicitation tasks: corresponding events (unincentivized)

Preference Elicitation Task

Question #	Option A		Option B
Q1	If Trump wins, receive $5; otherwise, $0.	● ○	$0.00
Q2		● ○	$0.25
Q3		● ○	$0.50
Q4		● ○	$0.75
Q5		○ ●	$1.00
Q6		○ ●	$1.25
Q7		○ ●	$1.50
Q8		○ ●	$1.75
Q9		○ ●	$2.00
Q10		○ ●	$2.25
Q11		○ ●	$2.50
Q12		○ ●	$2.75
Q13		○ ●	$3.00
Q14		○ ●	$3.25
Q15		○ ●	$3.50
Q16		○ ●	$3.75
Q17		○ ●	$4.00
Q18		○ ●	$4.25
Q19		○ ●	$4.50
Q20		○ ●	$4.75
Q21		○ ●	$5.00

Preference Elicitation Task

Question #	Option A		Option B
Q1	If unemployment increases, receive $5; otherwise, $0.	● ○	$0.00
Q2		● ○	$0.25
Q3		● ○	$0.50
Q4		● ○	$0.75
Q5		● ○	$1.00
Q6		○ ●	$1.25
Q7		○ ●	$1.50
Q8		○ ●	$1.75
Q9		○ ●	$2.00
Q10		○ ●	$2.25
Q11		○ ●	$2.50
Q12		○ ●	$2.75
Q13		○ ●	$3.00
Q14		○ ●	$3.25
Q15		○ ●	$3.50
Q16		○ ●	$3.75
Q17		○ ●	$4.00
Q18		○ ●	$4.25
Q19		○ ●	$4.50
Q20		○ ●	$4.75
Q21		○ ●	$5.00

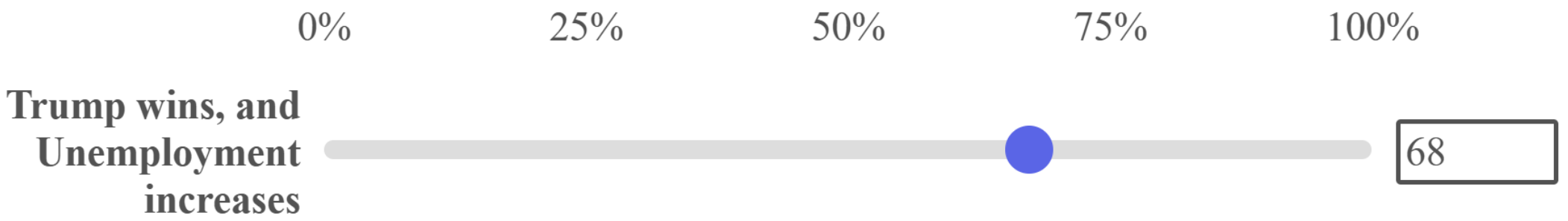
Preference Elicitation Task

Question #	Option A		Option B
Q1	If Trump wins and unemployment increases, receive $5; otherwise, $0.	● ○	$0.00
Q2		● ○	$0.25
Q3		● ○	$0.50
Q4		● ○	$0.75
Q5		● ○	$1.00
Q6		● ○	$1.25
Q7		● ○	$1.50
Q8		● ○	$1.75
Q9		● ○	$2.00
Q10		● ○	$2.25
Q11		○ ●	$2.50
Q12		○ ●	$2.75
Q13		○ ●	$3.00
Q14		○ ●	$3.25
Q15		○ ●	$3.50
Q16		○ ●	$3.75
Q17		○ ●	$4.00
Q18		○ ●	$4.25
Q19		○ ●	$4.50
Q20		○ ●	$4.75
Q21		○ ●	$5.00

Belief Elicitation Task

Question 7: What is the probability of these two events happening together:

- **Donald Trump wins the election**
- **U.S. unemployment rate increases from September 2024 (4.1%) to September 2025**



Overview

- Main Treatment: Election outcome + economic outcome, sequential order
  - Trump wins and unemployment increases
- Reverse Order Treatment: Economic outcome + election outcome, reversed order
  - Unemployment increases and Trump wins
- Odd/Even Treatment: Election outcome + economic outcome (odd/even), sequential order
  - U.S. unemployment rate parity is odd/even in Sep. 2025
  - U.S. public health care system ranking is odd/even in Sep. 2025
- Post-experiment survey: political views, Linda problem, cognitive uncertainty, demographics
- Sample: 1148 representative sample on Prolific

Overview

Treatment	Econ Event	Joint Event Order	Obs
Main	↑, ↓	Elec + Econ	384
Reverse Order	↑, ↓	Econ + Elec	383
Odd/Even	odd, even	Elec + Econ (odd, even)	381

Analytical Framework

- Three types of events
  - Election: own-party win ($Elec^{+}$); opposing-party win ($Elec^{-}$)
  - Economic: economy improves ($Econ^{+}$); economy worsens ($Econ^{-}$)
  - Joint events:
    - Congruent: $Elec^{+} \cap Econ^{+}$ and $Elec^{-} \cap Econ^{-}$
    - Incongruent: $Elec^{+} \cap Econ^{-}$ and $Elec^{-} \cap Econ^{+}$
- Elicit two variables:
  - CE(E): certainty equivalent of a lottery paying \$5 if event E occurs
  - $p(E)$: subjective probability of event E

Analytical Framework

- Conjunction rule in beliefs

$$p(E_1 \cap E_2) \leq \min\{p(E_1), p(E_2)\}$$

- Conjunction rule in choices

$$\text{CE}(E_1 \cap E_2) \leq \min\{\text{CE}(E_1), \text{CE}(E_2)\}$$

- Observation:

  If (1) beliefs satisfy the conjunction rule and (2) preferences satisfy first-order stochastic dominance (FOSD), then choices must also satisfy conjunction rule.

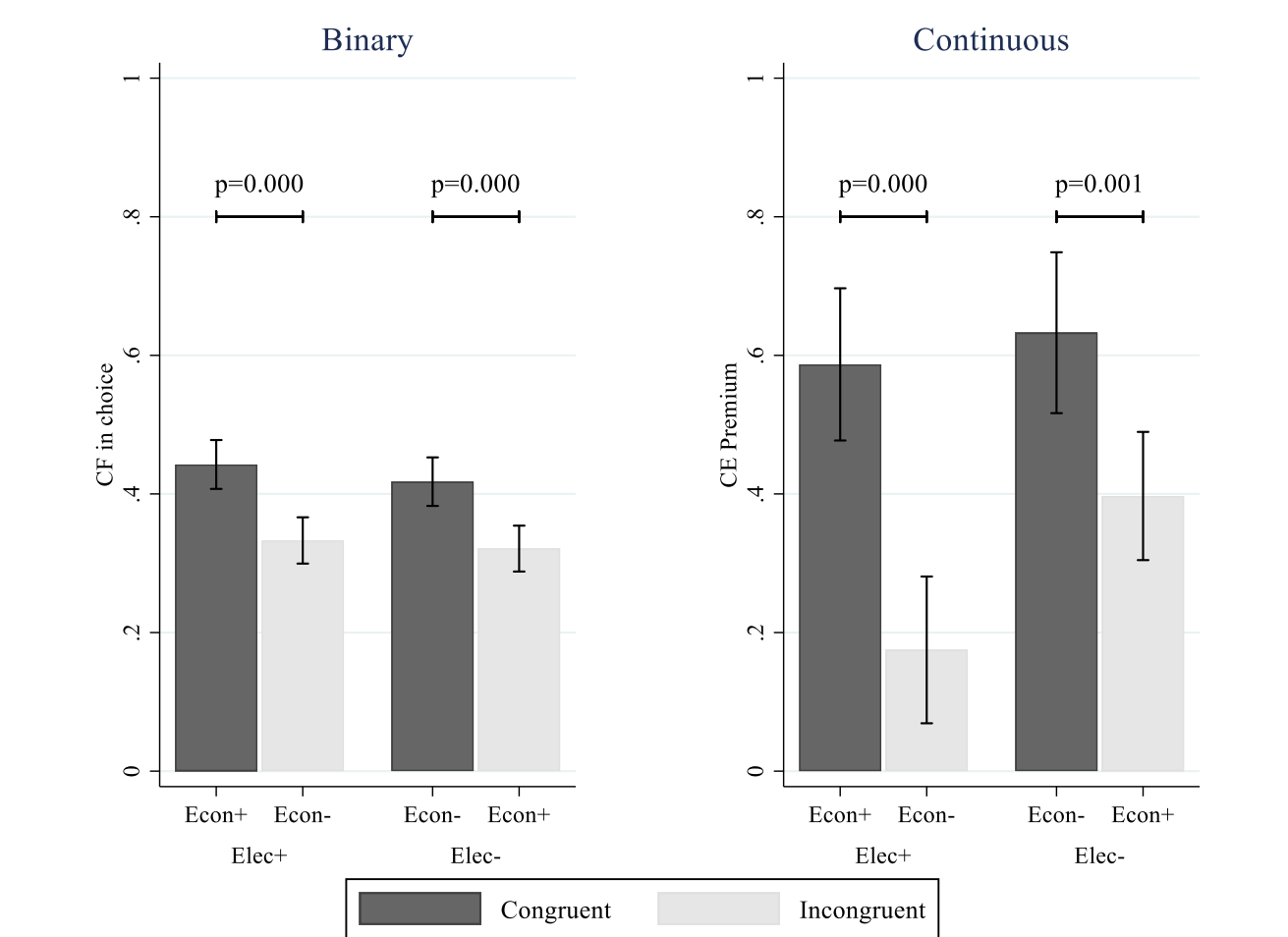
Results

Summary Statistics

	Main Treat (N=384)	Reverse Order (N=383)	Odd/Even (N=381)	Main vs. Reverse Order	Main vs. Odd/Even	Odd/Even vs. Reverse Order
Democrat	0.321	0.350	0.359	0.387	0.252	0.779
Republican	0.334	0.248	0.291	**0.009**	0.210	0.178
Independent	0.344	0.400	0.341	0.111	0.941	0.096
vote	0.672	0.666	0.691	0.859	0.586	0.470
age	46.729	45.162	44.790	0.164	0.100	0.749
male	0.482	0.455	0.514	0.447	0.367	0.097
edu	4.282	4.120	4.136	0.099	0.138	0.867
married	0.511	0.444	0.376	0.065	**0.000**	0.054
race	2.349	2.357	2.441	0.958	0.580	0.615
time	20.049	20.534	18.898	0.475	0.075	**0.013**
quiz1correct	0.852	0.864	0.822	0.616	0.262	0.105
quiz2correct	0.966	0.981	0. 971	0.176	0.693	0.335

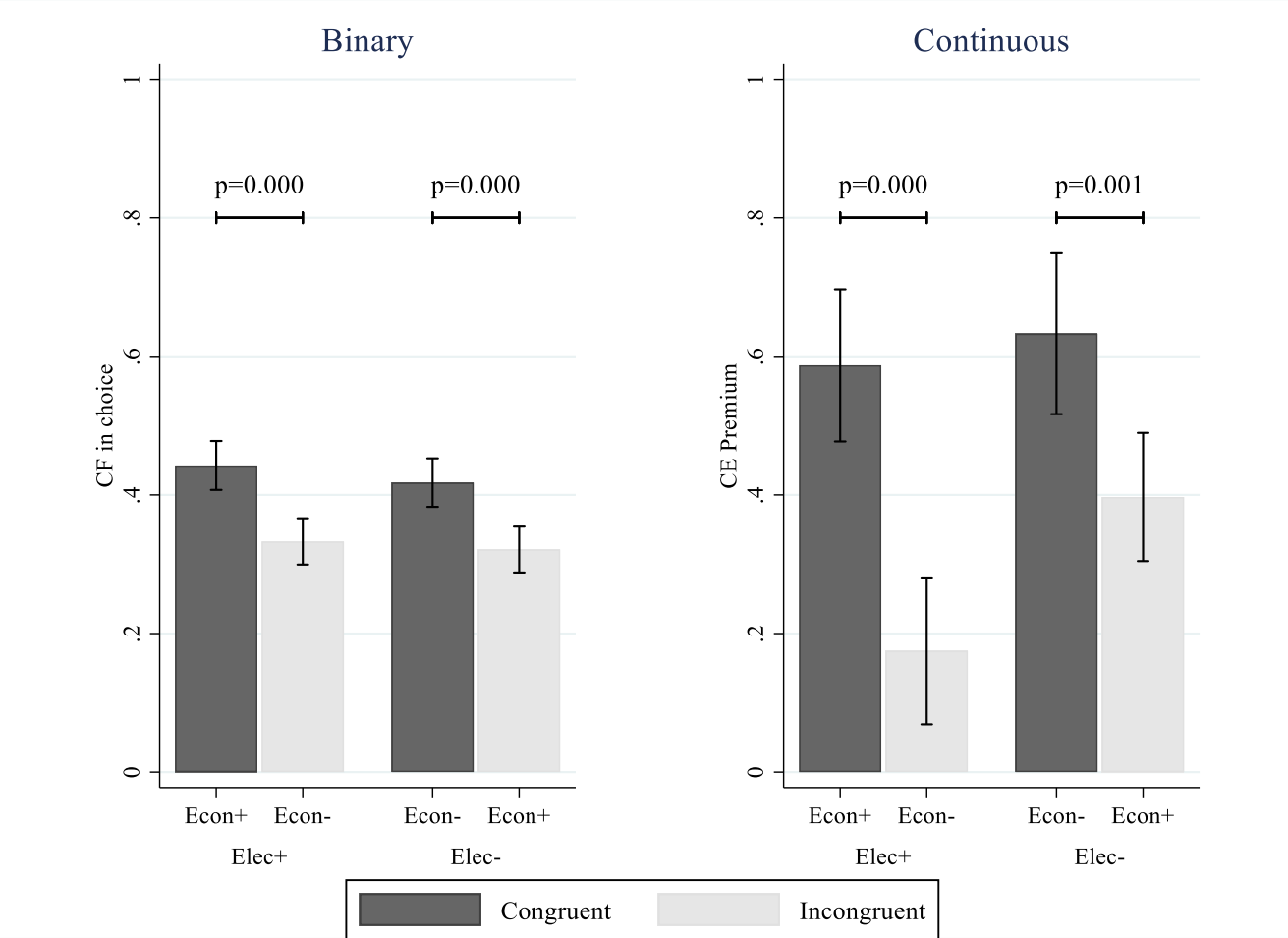
Main Treat: CF

- Compare the number of times choosing the lottery over the sure amount across different events. CF in choice=1 if joint event>min{Econ, Elec}+1
- CE premium=CE of joint event- min{Econ, Elec}



Main Treat: CF

- **Observation 1A**: There is a substantial proportion of conjunction fallacy in choices. Conjunction fallacy is more pronounced in congruent scenarios than in incongruent scenarios.



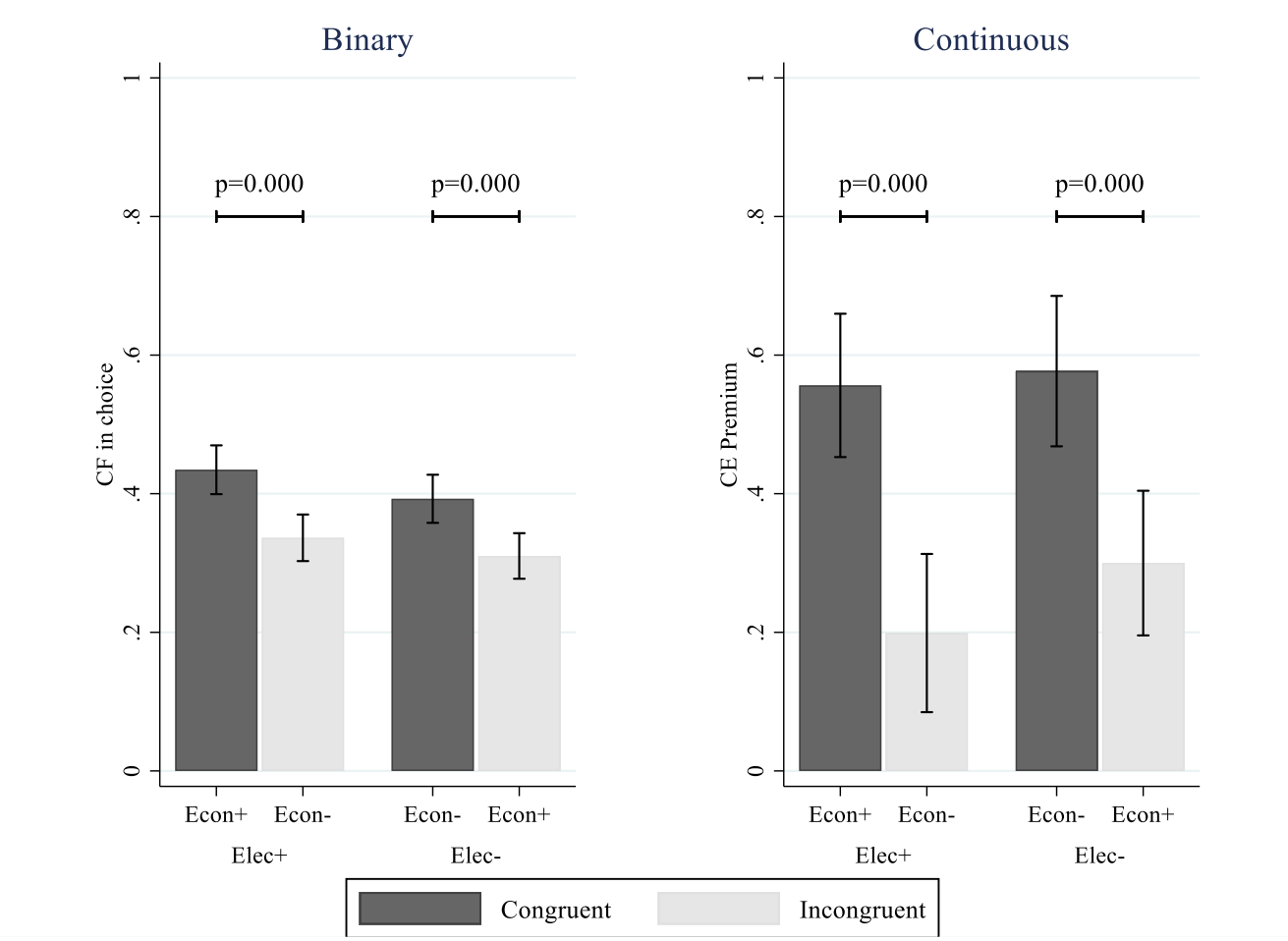
Main Treat: CF

- **Observation 1A**: There is a substantial proportion of conjunction fallacy in choices. Conjunction fallacy is more pronounced in congruent scenarios than in incongruent scenarios.

CF:	Binary		Continuous	
	Elec+	Elec-	Elec+	Elec-
	(1)	(2)	(3)	(4)
Congruent	0.110***	0.097***	0.412***	0.236***
	(0.024)	(0.024)	(0.082)	(0.081)
Constant	0.333***	0.321***	0.175***	0.397***
	(0.012)	(0.012)	(0.041)	(0.041)
Observations	1532	1532	1532	1532
R-squared	0.395	0.438	0.391	0.425

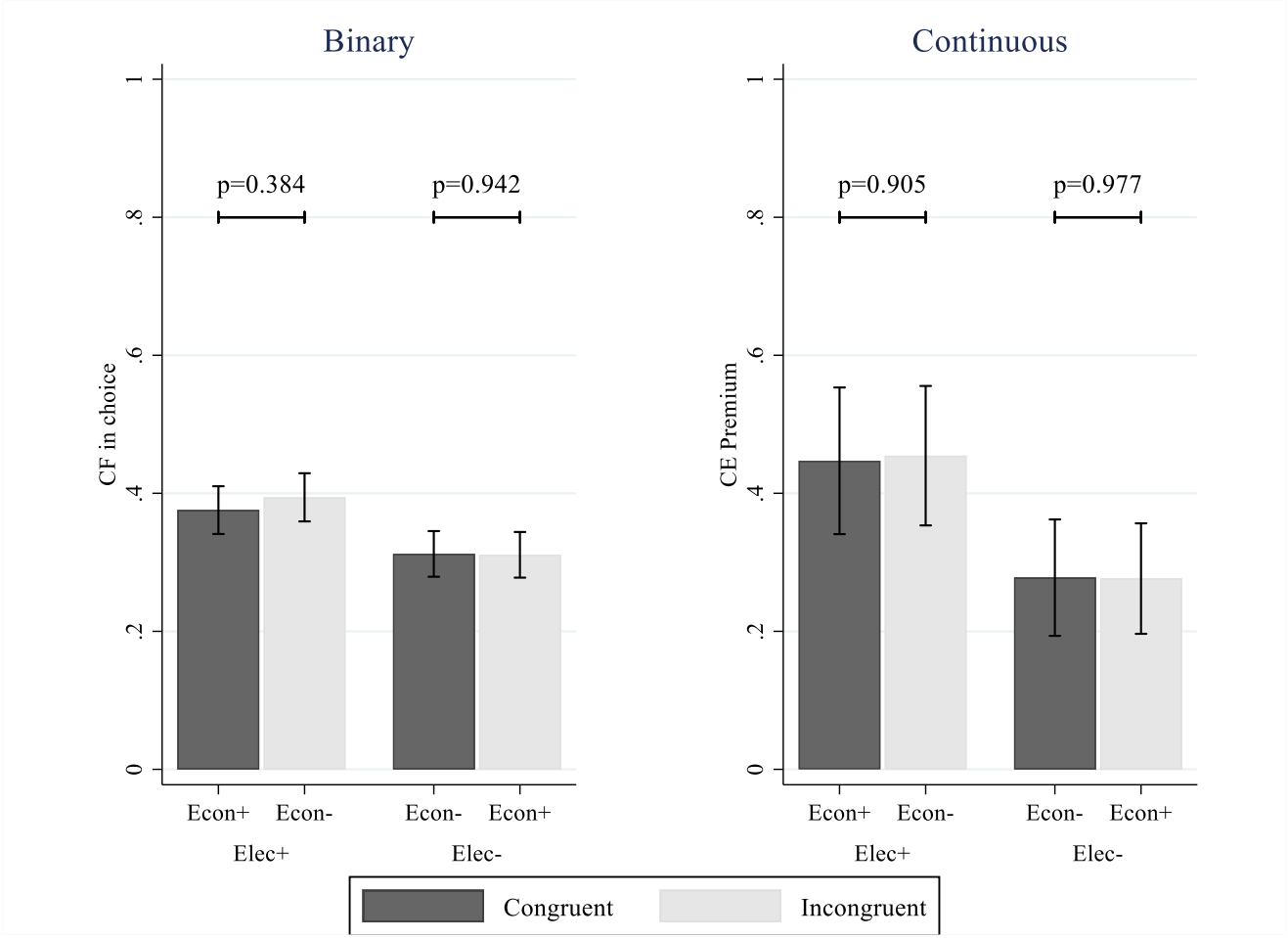
Reverse Treat: CF in choice

- **Observation 1B**: Reversing the order of constituents in the joint event does not affect the significant differences between congruent and incongruent scenarios



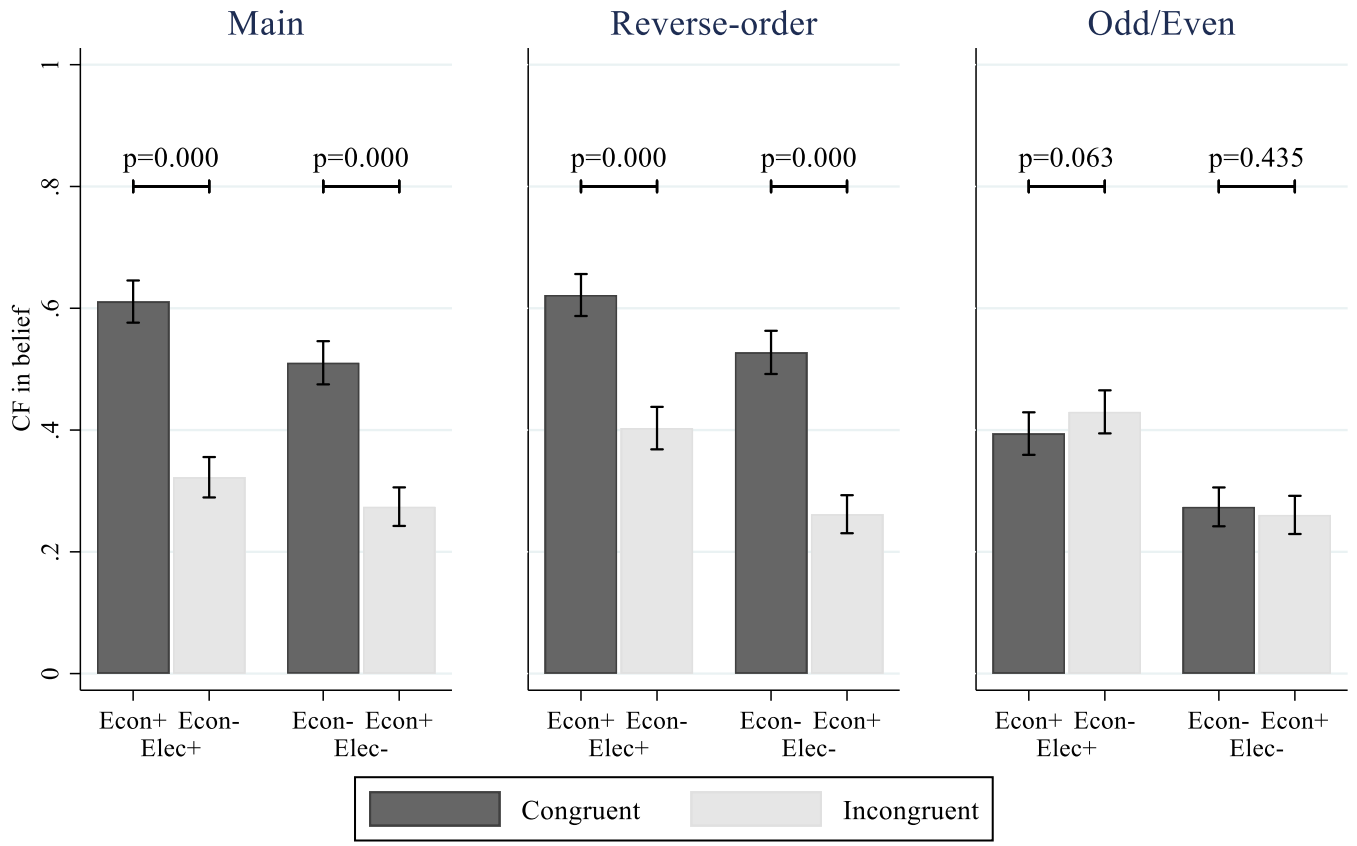
Odd/Even Treat: CF in choice

- **Observation 1C**: No significant difference in conjunction fallacy across joint events that share the same election constituent but different economic constituents without valence



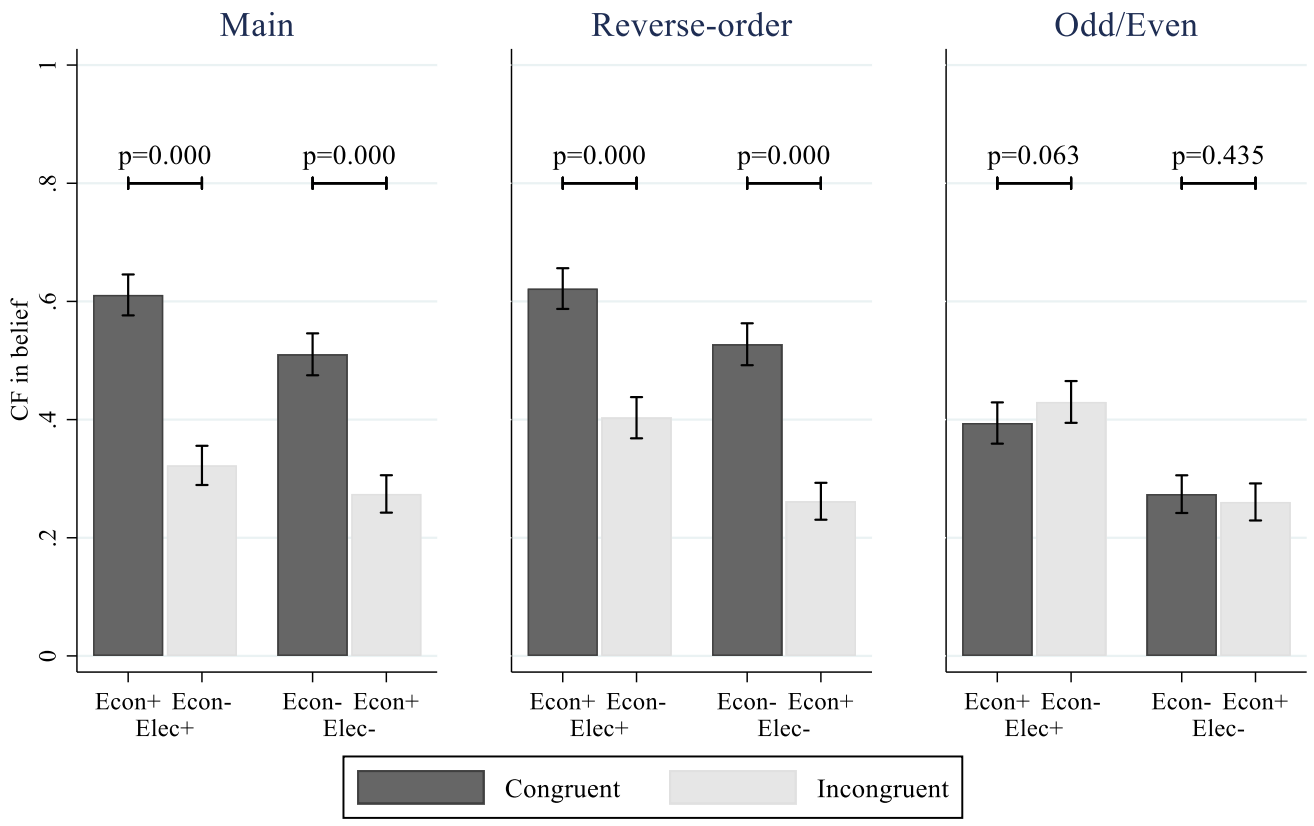
By Treat: CF in belief

- Compare the probability estimates across different events
- CF in belief =1 if Prob. of joint event>min{Econ, Elec}+5



By Treat: CF in belief

- **Observation 2**: There is a substantial proportion of conjunction fallacy in beliefs. Conjunction fallacy is more pronounced in congruent scenarios than in incongruent scenarios for both parties for Main and Reverse-order treatments, but not for Odd/Even treatments.



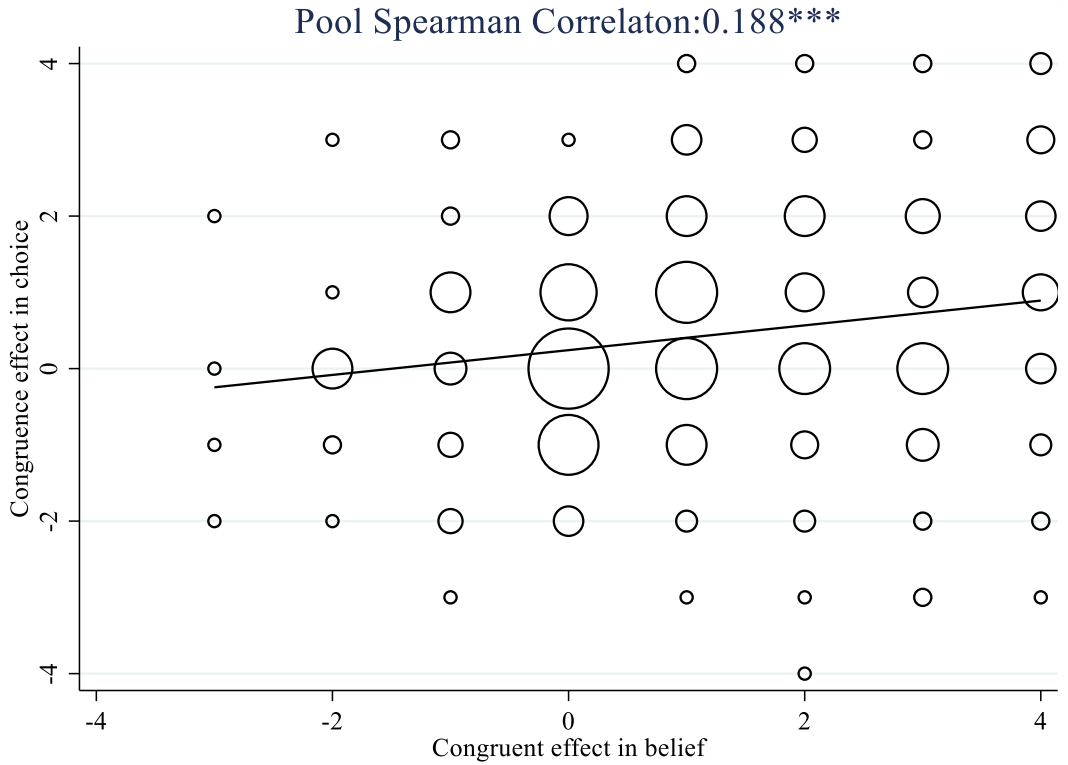
CF in choice and belief: individual level

- **Observation 3A**: The conjunction fallacy in belief is correlated with the conjunction fallacy in choice.

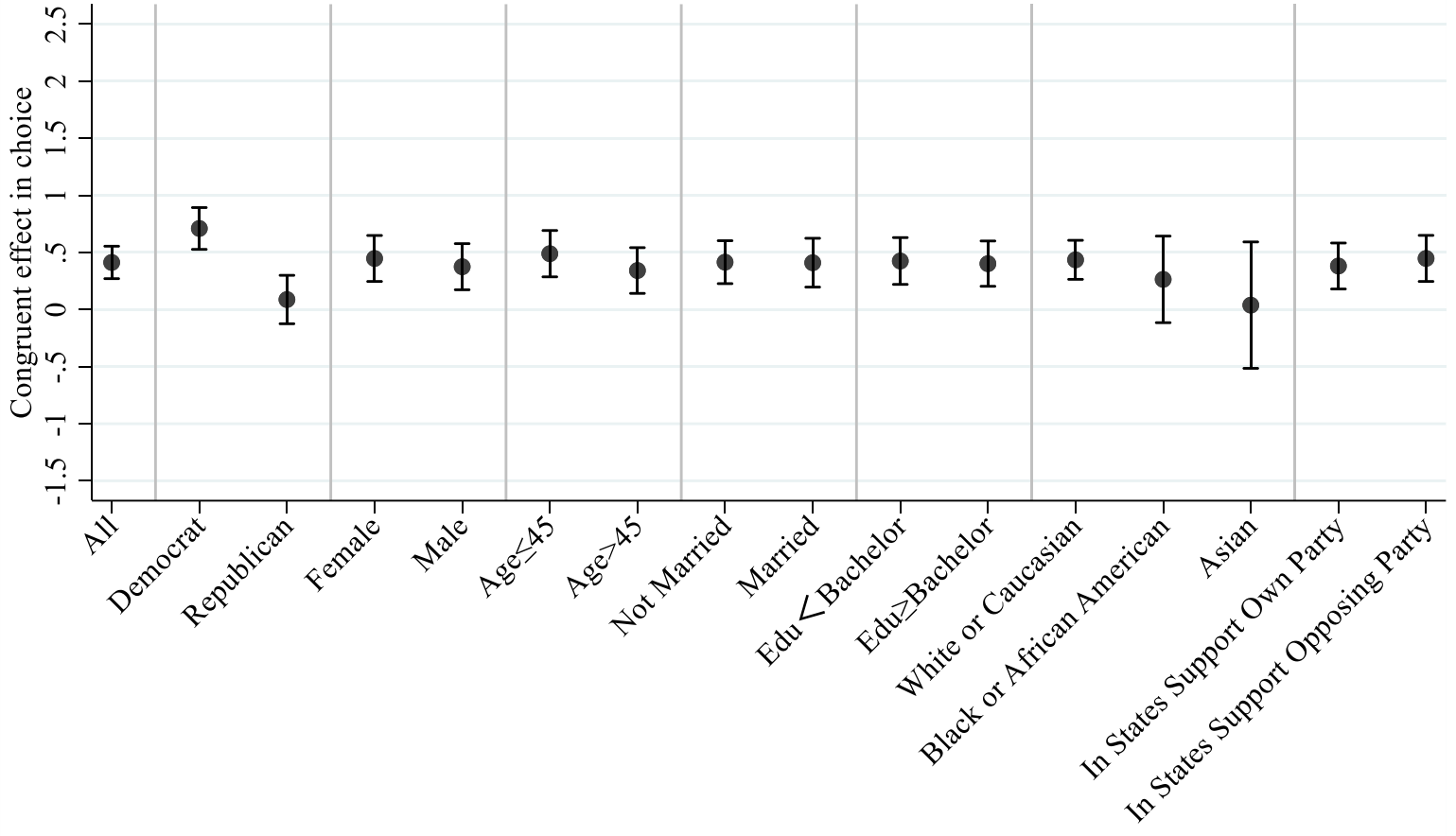
	Pool					
Dep.Var: CF in choice	Elec+			Elec-		
	(1)	(2)	(3)	(4)	(5)	(6)
Congruent	0.110***	0.079***	0.079***	0.097***	0.061**	0.061**
	(0.024)	(0.025)	(0.025)	(0.024)	(0.024)	(0.024)
CF in belief		0.108***	0.103***		0.149***	0.146***
		(0.029)	(0.028)		(0.028)	(0.029)
Constant	0.333***	0.298***	0.157*	0.321***	0.280***	0.477***
	(0.019)	(0.021)	(0.095)	(0.020)	(0.021)	(0.109)
Control	N	N	Y	N	N	Y
Observations	1532	1532	1528	1532	1532	1528
R-squared	0.013	0.024	0.056	0.010	0.031	0.046

Congruent bias in choice and belief: individual level

- Congruent effect in choice={joint > min{Econ, Elec}+1 when congruent}-{joint > min{Econ, Elec}+1 when incongruent}
- Congruent effect in belief={Prob. of joint > min{Econ, Elec}+5 when congruent}-{Prob. of joint > min{Econ, Elec}+5 when incongruent}
- **Observation 3B**: Congruence effect in belief is correlated that in choice.



Main Treat: Heterogeneous Analysis

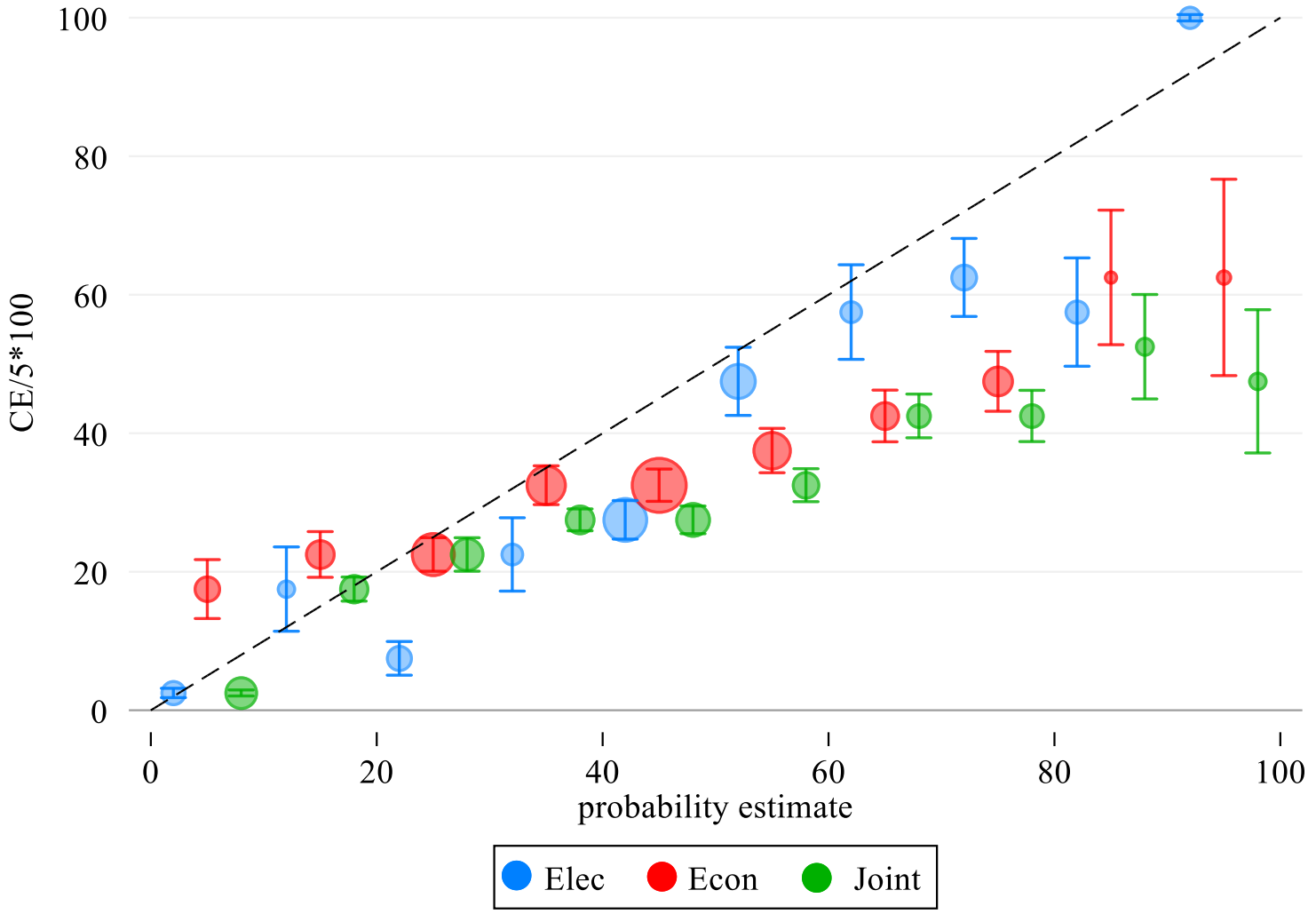


Discussion: Mechanisms

We consider three possible mechanisms for the observed CF in choice:

- Conjunction fallacy in belief: $p(E_1 \cap E_2) > \min\{p(E_1), p(E_2)\}$
- Source preference: individuals care not only the economic value of the lottery, but also the sentimental value arising from the source of uncertainty, favoring those that feel familiar, less ambiguous, and more personally connected.
  - Can be modeled by source-dependent utility function, e.g., u_{elec}, u_{econ}, u_{joint}
  - Source preference can explain the overall high level of CF in choice
  - However, it fails to account for the congruency-specific pattern we observe.

Source Preference

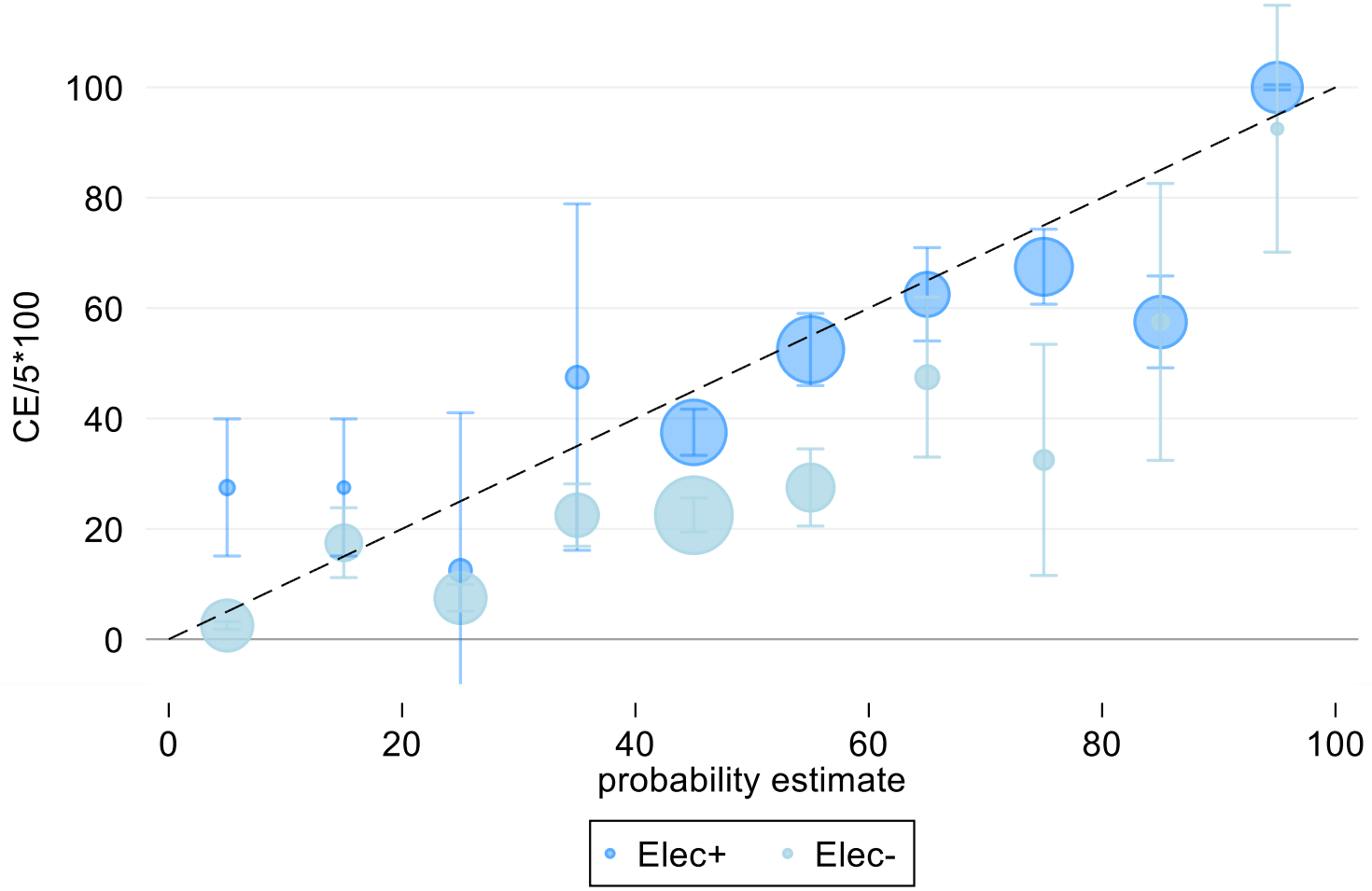


Discussion: Mechanisms

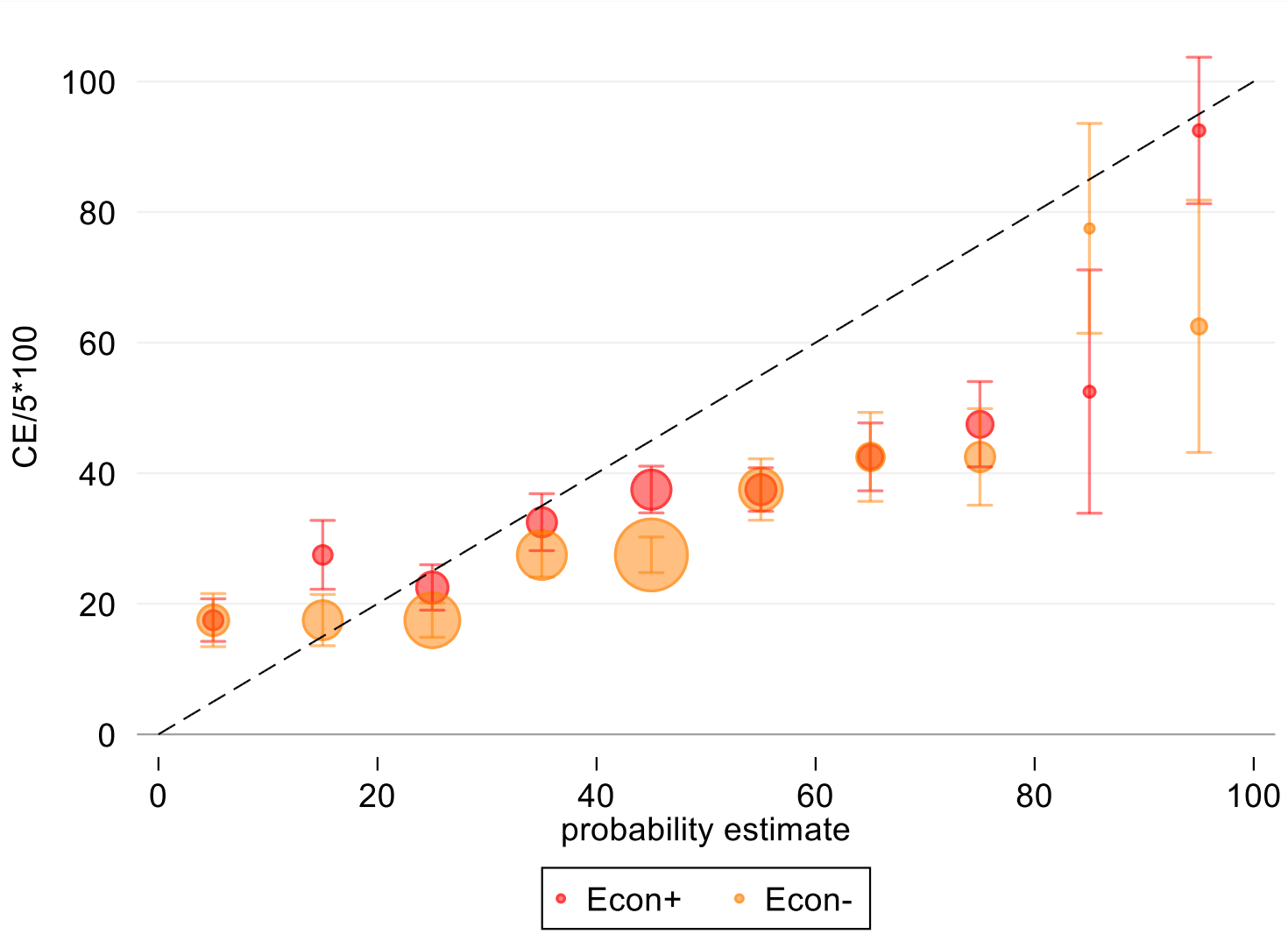
We consider three possible mechanisms for the observed CF in choice:

- Conjunction fallacy in belief: $p(E_1 \cap E_2) > \min\{p(E_1), p(E_2)\}$
- Valence preference: individuals care not only the economic value of the lottery, but also the sentimental value arising from states with a positive, desirable valence such as positive outcome of themselves and ingroup.
  - Can be modeled by state-dependent utility: e.g., u_{elec^+}, u_{elec^-}
  - Congruence of two events may have additional valence effect: $u_{elec^+ \cap econ^+}$
  - This mechanism helps explain the congruence effect

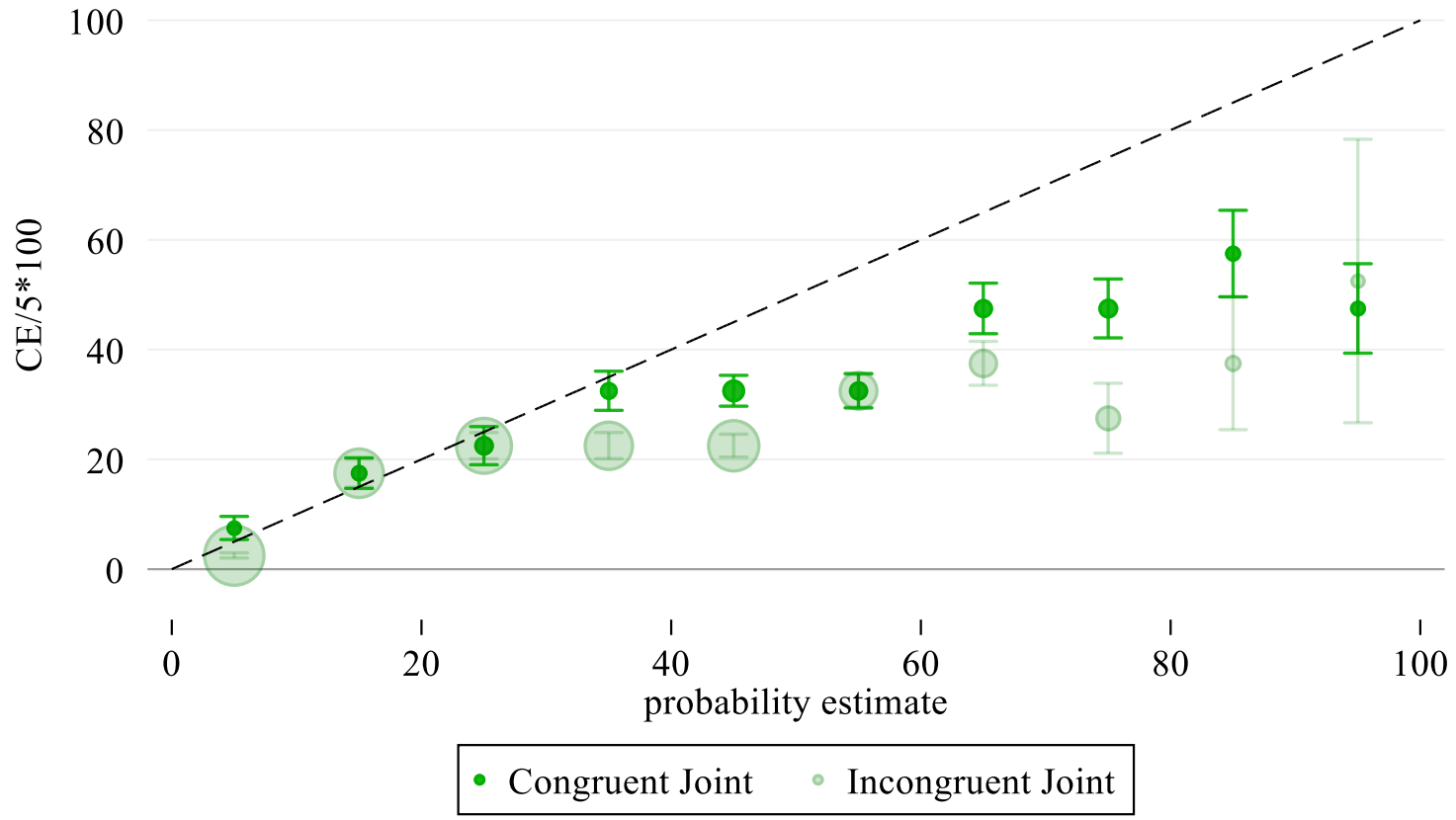
Valence Preference



Valence Preference



Valence Preference



Summary

- Political identity systematically distorts individuals' beliefs and choices regarding joint versus single events.
  - CF in choices violates monotonicity—a core property of most utility theories
  - CF in beliefs violates conjunction rule—a fundamental law of probability
  - CF in choices are partially due to CF in beliefs and partially due to valence preference.
- Individuals care about or/and are influenced by the sentimental values of beliefs and choices arising from the source and valence of uncertainty.
  - Individuals tend to favor congruent narratives—that align political preferences with economic outcomes. *"…outcomes make good stories or good hypotheses."*

Related Literature

- Identity, choice and belief formation
  - Akerlof and Kranton (2000, 2005); Chen and Li (2009); Fryer and Jackson (2019); Charness and Chen (2020); Dekel and Shayo (2023); Dimant et al. (2023); Bauer et al. (2024)
- Heuristics and biases
  - Conjunction fallacy: Tversky and Kahneman (1972, 1983); Crisp and Feeney (2009); Charness et al. (2010)
  - Correlation misperception: Enke and Zimmerman (2017); Enke (2020); Ungeheuer and Weber (2020); Esponda et al. (2023); Hossain and Okui (2024); He and Kucinskas (2024)
  - Motivated belief: Bernabou and Tirole (2016); Mobius et al. (2022)
- Narratives
  - Subjective causality: Eliaz and Spiegler (2020); Spiegler (2020); Schwartzstein and Sunderam (2020); Ellis and Thysen (2022)
  - Experiments: Angrisani et al. (2024); Kendall and Charles (2024); Morag and Loewenstein (2024)
  - “Together, we will make America strong again... wealthy again... proud again... safe again... great again.” from Donald Trump’s January 20, 2017 inaugural address.


THANK YOU