Gender Economics
Session 10
Experimental & Behavioral Economics

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Sciences Po Menton

Introduction

- **Why are girls choosing different tracks, majors and occupations?**
- **Experimental methods allow us to:**
  - Isolate behavioural traits (e.g., risk aversion, overconfidence, competitiveness)
  - Test causal effects of framing, incentives, and social context
  - Overcome confounding factors in observational data
- **Lab, field, and natural experiments** are now central tools in the literature, revealing subtle yet persistent behavioral differences between men and women.

This session explores how experimental designs uncover the micro-foundations of gender gaps.

Tournament Entry (Niederle and Vesterlund, 2007)

Research Question

Do men and women of similar ability differ in their willingness to enter competitive environments?

Data

- 40 lab participants (20 men, 20 women), Stanford University
- Math addition task under two payment schemes:
  - Piece-rate (non-competitive)
  - Tournament (competitive)
- Participants choose which scheme to use in a final round

Tournament Entry (Niederle and Vesterlund, 2007)

Empirical Strategy

- Measure actual performance and chosen compensation scheme
- Control for ability, overconfidence, risk aversion
- Estimate gender gap in tournament entry conditional on ability

Results

- 73% of men vs. 35% of women choose the tournament
- No gender difference in ability or task performance
- Gender gap explained by male overconfidence and competition preferences

Performance in Competition (Gneezy et al., 2003)

Research Question

Do men and women perform differently under competition? Does group composition matter?

Data

- Lab experiment: 6-person groups (3 men, 3 women or single-sex)
- Task: solving mazes under three conditions:
  - Piece-rate (no competition)
  - Tournament (winner-takes-all)
  - Random prize (control for uncertainty)

Performance in Competition (Gneezy et al., 2003)

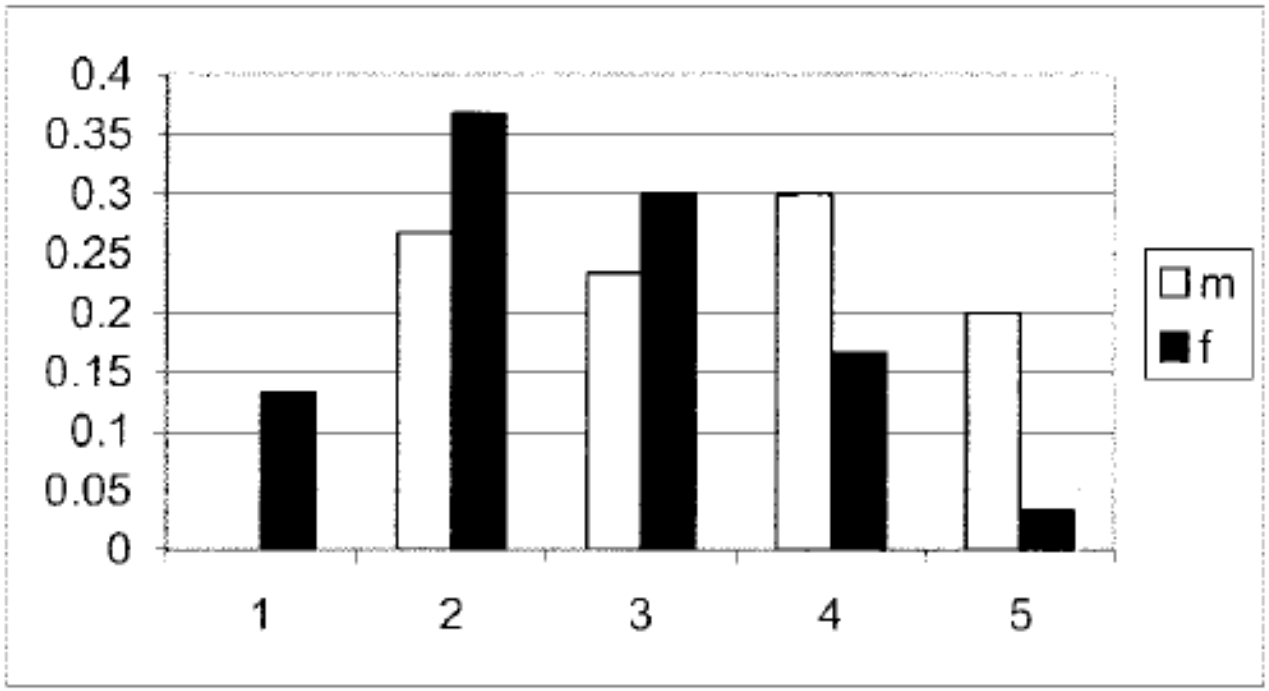


FIGURE V
Choice of Difficulty Level

The horizontal axis corresponds to the difficulty level, and the height of each bar reports the percentage of the 30 male and 30 female participants, respectively, who chose that difficulty level.

Performance in Competition (Gneezy et al., 2003)

Empirical Strategy

- Compare average performance across treatments and gender
- Within-subject design with treatment rotation
- Analyze effect of group composition (mixed vs. single-sex)

Results

- Men increase performance under competition; women do not
- No gender difference under piece-rate
- Women perform better in single-sex competition than in mixed-gender

Competition Early in Life (Sutter and Glätzle-Rützler, 2015)

Research Question

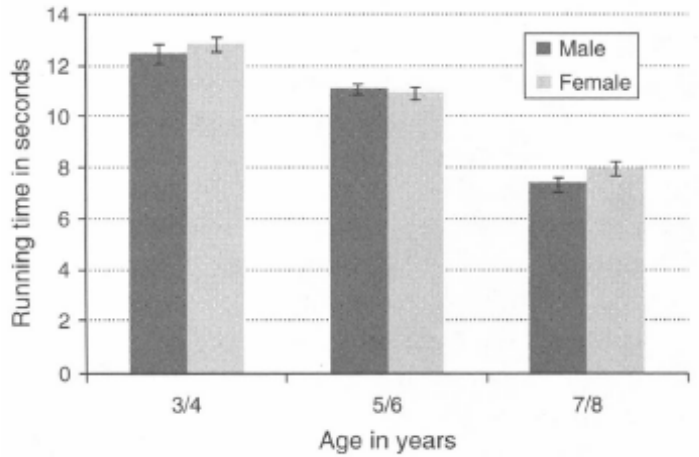
At what age do gender differences in willingness to compete emerge, and do they persist over time?

Data

- 3 experimental studies with 1,570 children and teens (ages 3–18)
- Tasks: gym races and arithmetic tasks with tournament vs piece-rate pay
- Panel follow-up with 316 adolescents 2 years later

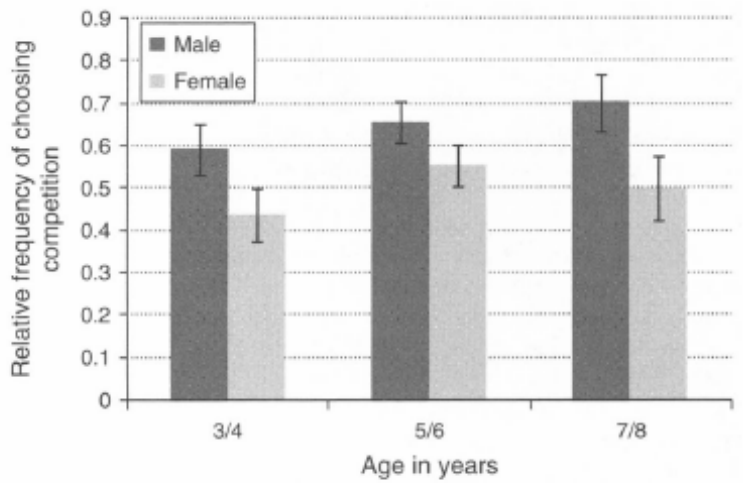
Competition Early in Life (Sutter and Glätzle-Rützler, 2015)

Figure 1(A) **Performance in Running in Experiment I ($N = 412$)**



Note. Error bars indicate mean ± standard error.

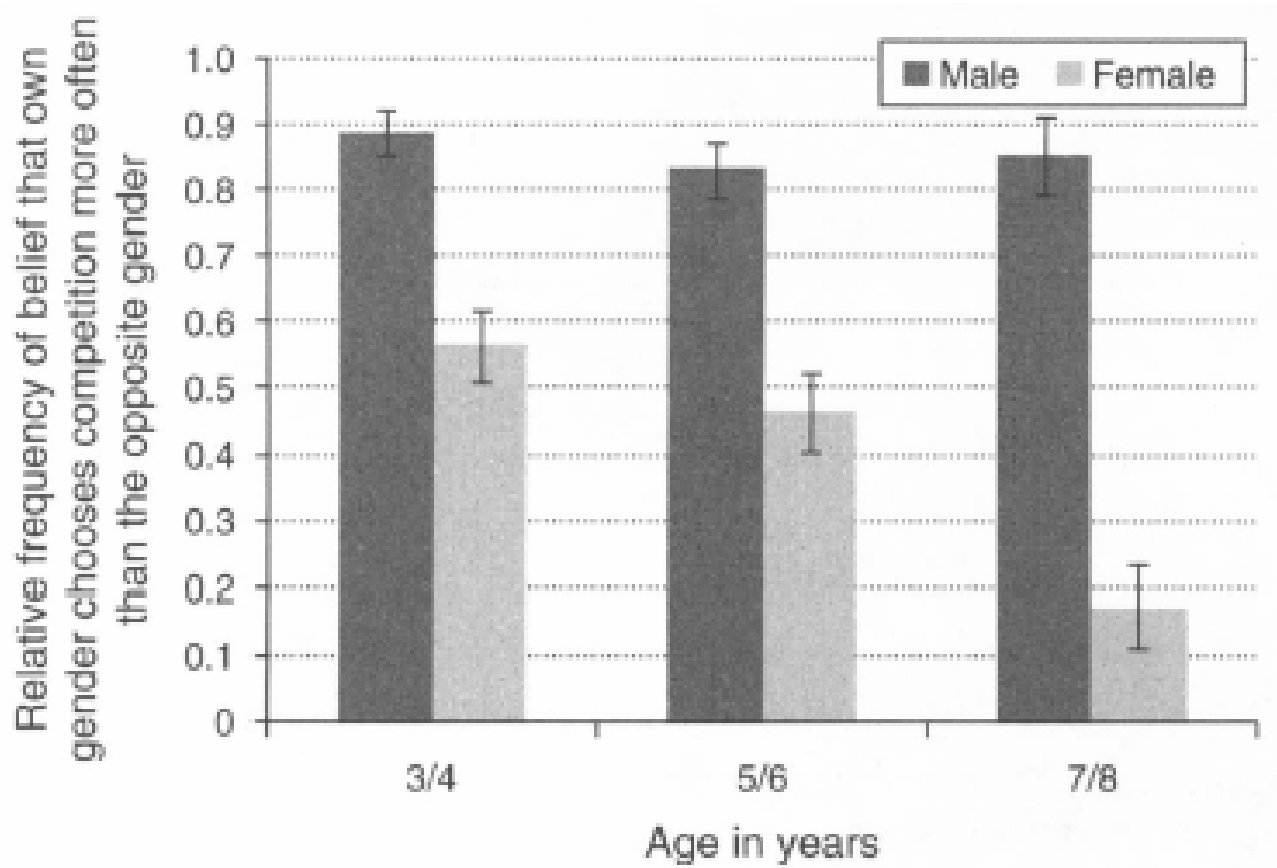
Figure 1(B) **Relative Frequency of Choosing the Competitive Payment Scheme in the Running Task in Experiment I ($N = 412$)**



Note. Error bars indicate mean ± standard error.

Competition Early in Life (Sutter and Glätzle-Rützler, 2015)

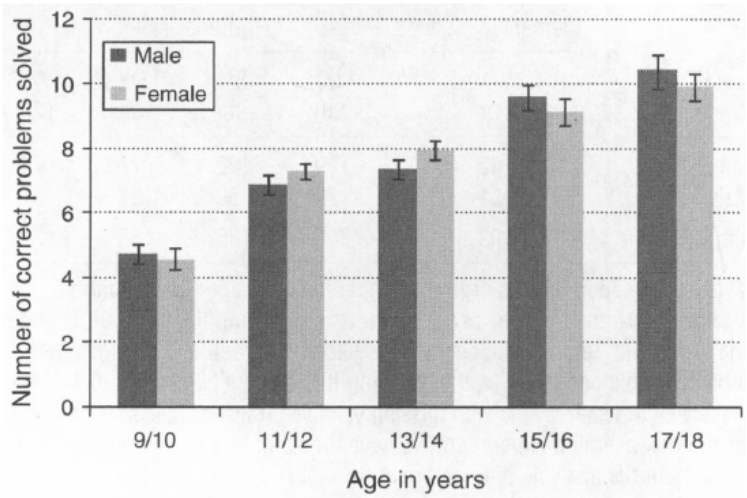
Figure 2 **Expectations of Children About Which Gender Chooses Competition More Often in the Running Task of Experiment I ($N = 405$)**



Note. Error bars indicate mean ± standard error.

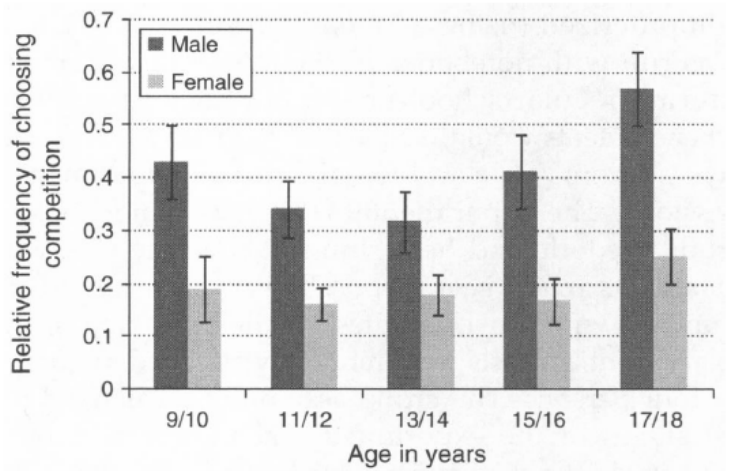
Competition Early in Life (Sutter and Glätzle-Rützler, 2015)

Figure 5(A) **Performance in the Math Task of Adding Two-Digit Numbers in Experiment III ($N = 717$)**



Note. Error bars indicate mean ± standard error.

Figure 5(B) **Relative Frequency of Choosing Competition in Experiment III ($N = 717$)**



Competition Early in Life (Sutter and Glätzle-Rützler, 2015)

Empirical Strategy

- Between-subjects and within-subjects experimental design
- Measure tournament entry choices by age and gender
- Control for risk preferences, ability, and expectations

Results

- Gender gap in competitiveness appears as early as age 3–5
- Boys 10–20pp more likely to choose competition
- Gap persists across age and time (confirmed in panel)
- Implication: interventions need to begin early

Competitiveness & Track Choice (Buser et al., 2014)

Research Question

Does individual competitiveness predict educational track choice? Does it help explain gender gaps?

Data

- Dutch secondary students (400), pre-university level
- Lab-style experiment to measure competitiveness
- Admin data on grades, chosen academic track

Competitiveness & Track Choice (Buser et al., 2014)

Empirical Strategy

- Estimate impact of competitiveness on track choice (STEM vs. others)
- Control for grades, confidence, and risk preferences
- Decompose gender gap in track choice

Results

- Boys more competitive and more likely to choose science/math tracks
- Competitiveness explains 20% of gender gap in track choice
- Effect robust to controls for ability and confidence

Competitive Pressure in Mathematics (Iriberri and Rey-Biel, 2018)

Research Question

Does competition affect boys' and girls' performance differently in high-stakes math contests?

Data

- 10,000+ students from Catalonia (Spain), ages 15–16
- Two-stage math competition: low-stakes and high-stakes rounds
- Linked to admin data: grades, gender, school background

Competitive Pressure in Mathematics (Iriberri and Rey-Biel, 2018)

Empirical Strategy

- Compare performance between stages (within-subject)
- Focus on gender differences under increased competition
- Control for ability using classroom grades

Results

- Girls perform worse under competitive pressure
- Boys' performance improves in high-stakes stage
- Competitive pressure widens the gender gap despite equal prior performance

Competitive Workplaces (Flory et al., 2015)

Research Question

Do women avoid job environments with competitive pay structures? Is this avoidance due to selection or preferences?

Data

- Large-scale natural field experiment on job applications
- $\geq$7000 job seekers invited to apply to advertised jobs
- Ads randomly varied compensation scheme: individual pay vs competitive bonus

Competitive Workplaces (Flory et al., 2015)

Empirical Strategy

- Random assignment of ad treatment across similar jobs
- Compare application rates by gender across treatments
- Additional lab studies to test mechanisms (risk, confidence, social preferences)

Results

- Women significantly less likely to apply to jobs with competitive pay
- Difference not driven by performance or confidence
- Selection out of competition plays major role in gender job sorting

Competitive Workplaces (Flory et al., 2015)

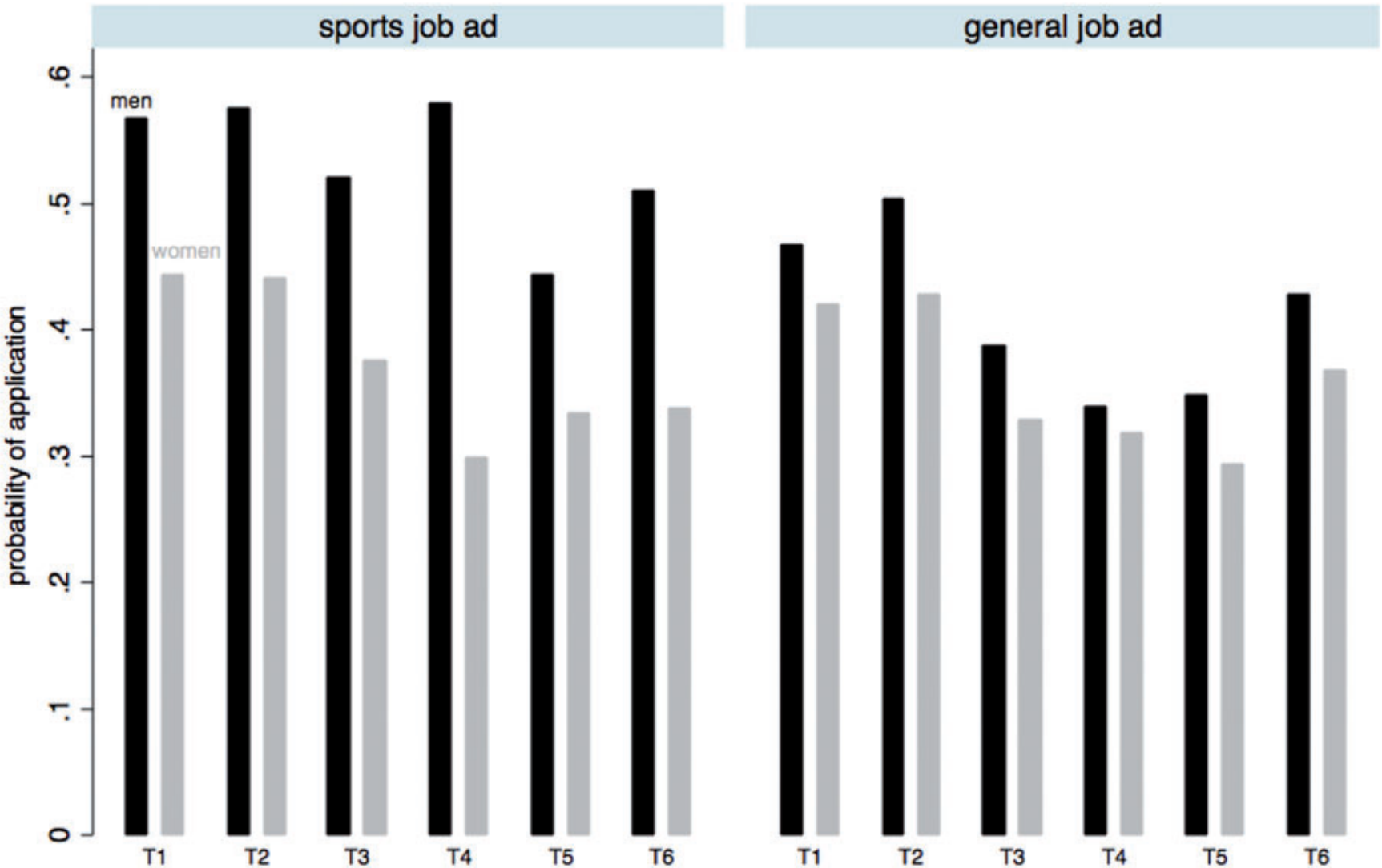


FIGURE 3

Competitive Workplaces (Flory et al., 2015)

- **Framing Matters:** Adding a "sports context" to the job ad (e.g., references to sports) further amplifies the gender gap:
  - Effect disappears under neutral framing.

- **Mechanisms Explored:**
  - **Discrimination?** No difference based on the gender of the employer
  - **Preferences:** Women less attracted to overtly competitive or stereotypically "male" environments.
  - **Social Norms & Identity:** Masculine framing signals a poor fit, leading women to opt out.
  - **Risk Aversion:** Part of the gap, but not the sole driver

- **Policy Implication:** Competition-based pay structures and gendered work environments may unintentionally filter out qualified women

Male Overconfidence (Barber and Odean, 2001)

Research Question

Do gender differences in overconfidence explain excess trading and reduced investment returns?

Data

- Account data from over 35,000 U.S. households (1991–1997)
- Brokerage firm records: trading frequency, returns, account type (single vs joint)
- Matched by gender to isolate effects

Male Overconfidence (Barber and Odean, 2001)

Empirical Strategy

- Compare turnover and net returns by gender
- Test predictions of overconfidence models
- Focus on single vs joint accounts to isolate behavioral traits

Results

- Men trade 45% more than women; single men 67% more than single women
- Higher turnover lowers net returns (2.65pp for men vs 1.72pp for women)
- Evidence consistent with gender-based overconfidence

Willingness to Guess (Iriberri and Rey-Biel, 2021)

Research Question

Are girls less likely to guess when uncertain on multiple-choice tests? What are the implications for observed gender gaps?

Data

- 20,000+ students in national diagnostic test (Spain, 2017)
- 4 versions of test: some penalize guessing, others don't
- Randomized test design by student within school

Willingness to Guess (Iriberri and Rey-Biel, 2021)

Empirical Strategy

- Exploit random assignment to test format (with/without penalty)
- Compare omitted vs guessed answers by gender
- Estimate impact of guessing behavior on performance gap

Results

- Girls skip more questions when guessing is penalized
- No difference in actual knowledge
- Accounting for guessing explains 60–100% of observed gender gap

Risk: Literature Review

TABLE 1

	Experimental details	Pay	Gain/ loss	Summary	Risk taking	Controls included?
Holt and Laury (2002)	Students	Yes	Gain	Choice between lotteries according to mean–variance. Varied also the level of pay	Low payoffs: M > F High payoffs: M = F	Yes
Hartog, Ferrer-I-Carbonell, and Jonker (2002)	Mail survey and Dutch newspaper	No	Gain	Willingness to pay for high-stakes lotteries. Gender difference in risk aversion parameter is estimated at 10 to 30 percent	M > F	Yes
Dohmen et al. (2005)	Rep. sample of German population and students	real and hyp	Both	Survey instrument is validated in experiments. Survey questions predicted behavior well	M > F	Yes
Powell and Ansic (1997)	Students	Yes	Both	Choice of insurance cover in one treatment and an unfamiliar financial decision about gains in another	M > F	No
Eckel and Grossman (2008a)	Students	Yes	Both	Choice between lotteries according to mean–variance. Frame (gain/ loss) changed between treatment	M > F	Yes
Eckel and Grossman (2008c)	Students	Yes	Both	Choice between lotteries according to mean–variance. Lotteries and investment frames with the possibility of loss, and a lottery frame with no loss	M > F	Yes
Fehr-Duda, Gennaro, and Schubert (2006)	Students	Yes	Both	Gender differences depend on the size of the probabilities for the lotteries' larger outcomes	M > F	Yes
Levin, Snyder, and Chapman (1988)	Students	No	Both	Half of the subjects were given the "chance of winning" each gamble, and half were given the "chance of losing" each lottery	M > F	No
Finucane et al. (2000)	Phone survey	No	Both	Ethnically diverse group of participants. White males were more risk taking than all other groups	M > F	Yes
Schubert et al. (1999)	Students	Yes	Both	Choice between certain payoffs and lotteries in abstract and contextual frames	Gains: M > F Losses: M > F Contextual: M = F	No

Risk Attitudes (Dohmen et al., 2011)

Research Question

Can survey questions reliably measure individual risk preferences and predict behavior? How do these vary by gender?

Data

- German Socio-Economic Panel (SOEP), 22,000 adults
- Follow-up field experiment with 450 subjects choosing real-stakes lotteries
- Measures include general risk question and context-specific items (e.g., driving, health)

Risk Attitudes (Dohmen et al., 2011)

Empirical Strategy

- Compare self-reported survey responses to actual lottery choices
- Use regressions to estimate determinants of risk preferences (gender, age, etc.)
- Examine predictive power of different measures on real-world behaviors

Results

- Women significantly less risk-seeking in both survey and experimental tasks
- Survey measures valid predictors of actual behavior
- General risk question is best all-round predictor of risky choices

Risk Behaviour (Booth and Nolen, 2012)

Research Question

Are gender differences in risk aversion due to innate preferences or shaped by environment (nurture)?

Data

- 261 students (Year 10 and 11), UK single-sex and coed schools
- Experimental setting: choice between a sure payoff and a risky lottery
- Randomized into all-girl or mixed-gender groups
- Post-experiment survey on risk attitudes and demographics

Risk Behaviour (Booth and Nolen, 2012)

Empirical Strategy

- Estimate probability of choosing risky option
- Compare across school type and group composition
- Control for cognitive ability, family background, and gender norms

Results

- Girls in all-girl groups or single-sex schools more likely to choose risky lottery
- Suggests environment significantly affects risk preferences
- Gap not fully explained by stated preferences—revealed behavior differs

Confidence, Information & Bargaining (Biasi and Sarsons, 2021)

Research Question

To what extent do information and self-confidence explain gender gaps in bargaining over pay?

Data

- 2020 survey of 3,156 Wisconsin public school teachers (13% response rate)
- Questions on salary negotiation, knowledge of colleagues' pay, and confidence
- Linked to administrative pay data for contextual variables

Confidence, Information & Bargaining (Biasi and Sarsons, 2021)

Empirical Strategy

- Compare bargaining outcomes by gender: entry, mid-career, and future intentions
- Estimate how much gender gaps shrink when controlling for:
  - Knowledge of peer salaries, Knowing someone who negotiated, & Confidence in teaching and speaking to strangers

Results

- Women 8pp less likely to negotiate at start; 5pp less likely to plan to negotiate
- Knowing someone who negotiated increases bargaining probability up to 14pp
- Confidence in talking to strangers matters more than self-evaluation of ability
- Information and confidence reduce — but do not eliminate — gender gap

Biasi & Sarsons (2022) — Flexible Wages & Gender Wage Gap

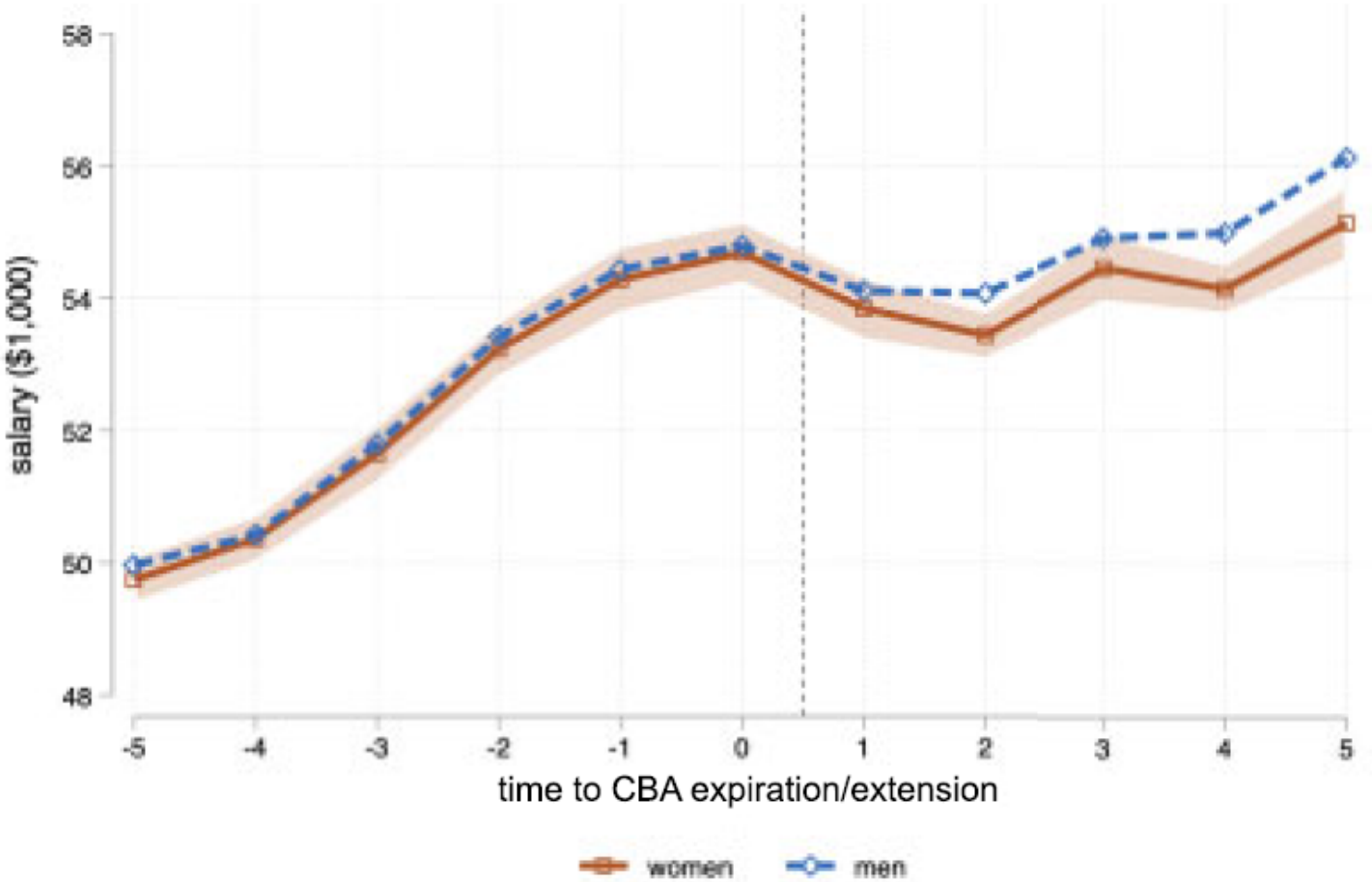
Research Question

Does introducing flexibility in wage setting exacerbate gender pay gaps? What is the role of bargaining?

Data

- Universe of Wisconsin public school teachers (2006–2016)
- Policy shock: Act 10 (2011), ending collective bargaining and enabling individual wage negotiations
- Linked to test scores, mobility, and leadership gender data

Biasi & Sarsons (2022) — Strategy and Results



Biasi & Sarsons (2022) — Strategy and Results

Empirical Strategy

- Event study + difference-in-differences: variation in Collective Bargaining Agreement expiration across districts
- Use administrative + survey data to analyze bargaining behavior and wage gaps

Results

- After pay became flexible, gender wage gap increased by 0.8%
- Women 12–23% less likely to negotiate; especially when their counterpart is male
- No evidence that gap is explained by teacher quality or mobility
- Gaps disappear under female leadership → environment matters

Conclusion

- **Competitiveness:** Gender gaps emerge early and persist — women are less likely to enter or perform well in competitive settings, even when equally able.
- **Environment Matters:** Framing, peer composition, and social norms (e.g., masculine cues like sports) shape participation and outcomes.
- **Preferences vs. Constraints:** Gender differences often reflect socialized preferences (risk, confidence), not innate traits. These could be changed
- **Negotiation:** Women negotiate less and achieve lower returns in flexible pay settings — especially in male-led environments
- **Policy Implications:** Early interventions, inclusive framing, transparency in pay, and institutional design (e.g., female leadership, structured wages) can reduce behavioral barriers.

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