

Negotiation, Employer Demand, and Gender Disparities

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Motivation

- Individual bargaining is pervasive, even under formal pay structures (Caldwell et al. 2025)
 - Employers rarely observe outside options or productivity directly — they may **infer** them from negotiation
 - These inferences shape wages, career placement, and hiring decisions

⇒ Little known: how employers interpret negotiation, or how beliefs shape outcomes
- Bargaining is a key source of **gender inequality** in pay-setting (Card, Cardoso & Kline 2016; Niederle & Vesterlund 2007; Roussille 2024; Cullen et al. 2025)
 - ⇒ Workers' behavior, or employers' **interpretation** of identical behavior?
- Needs data on employer beliefs about *observationally identical* negotiators — still scarce (Cullen 2024)

We Study Employers' Perceptions and Negotiation Behavior

1. **Model** employer learning from negotiation behavior

- Counteroffer intensity $\rightarrow$ inferred outside options & productivity $\rightarrow$ wage & senior-track decisions
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2. **Field experiment**: 493 recruiters evaluate 7,000+ applications, consult us (“Employer”) on final compensation packages

- Mimics real-world recruitment outsourcing (Agan, Cowgill & Gee 2025)
- 16 candidates per recruiter, actively negotiating: resumes, informal offers, **counteroffers** — the post-screening bargaining stage (not initial asks)
- Randomized: gender; counteroffer above/below target & batch share; pay-transparency

⇒ Wages move symmetrically by gender; advancement, rejection, & assessments diverge

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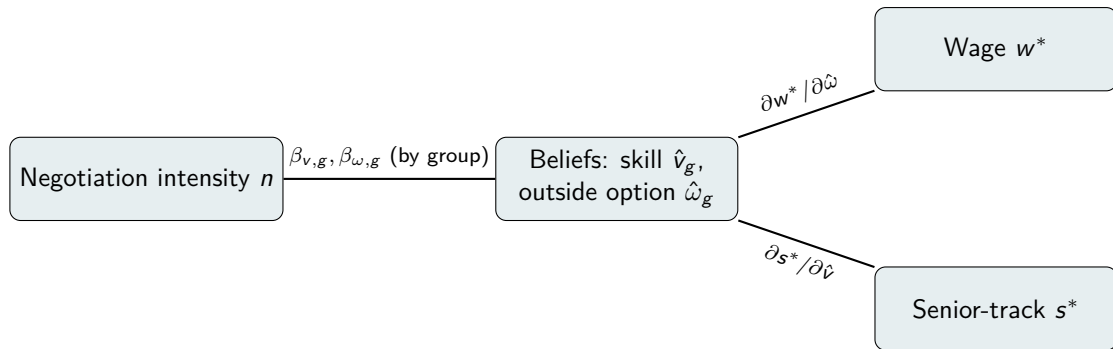
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3. **Structural model**: isolates belief-driven share of the gender gap, derives optimal counteroffers, quantifies pay-transparency's effect on discretion

Conceptual Framework

Conceptual Framework



- Negotiation is a noisy signal of **both** skill (*complementarity* with seniority) and outside options
- Same behavior, **different employer inference** by group $\Rightarrow$ gender gaps

Firm's Problem

- Negotiation n is a noisy signal of skill v and outside option ω : $n = \beta_{v,g}v + \beta_{\omega,g}\omega + \varepsilon$, group-specific β 's
- Firm forms beliefs $f_g(v, \omega \mid n) \rightarrow$ picks wage w and senior-track score $s \in [0, 1]$; acceptance probability $\Lambda(w + \tau s - \omega)$
- Wage anchored to a blend of inferred outside option and institutional benchmark; both instruments costly for the firm to move:

$$\bar{w}_g^{\text{eff}}(n) = \alpha \hat{\omega}_g(n) + (1 - \alpha) \bar{w}^{\text{inst}}, \quad C_w(w) = \frac{\kappa_w}{2}(w - \bar{w}^{\text{eff}})^2, \quad C_s(s) = \frac{\kappa_s}{2}s^2$$

- Skill and seniority are complements in output: $v(1 + \delta s)$
- Firm maximizes expected surplus net of adjustment costs and a rejection cost c_R ; extends an offer only if profit clears the outside value $\bar{V}$

Firm Objective

Core Predictions

1. **Wages and senior-track needn't move together:** wages track $\hat{\omega}$; senior-track tracks $\hat{v}$ (when $\tau, \delta > 0$, $\kappa_W > \kappa_S$). $\hat{\omega} \uparrow$ without $\hat{v} \uparrow \Rightarrow$ surplus falls, rejection more likely.

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2. **Group gaps come from differential belief updating.** For $y \in \{w^*, s^*\}$:

$$\frac{dy_m^*}{dn} - \frac{dy_f^*}{dn} = \frac{\partial y^*}{\partial \hat{\omega}} \underbrace{\left(\frac{d\hat{\omega}_m}{dn} - \frac{d\hat{\omega}_f}{dn} \right)}_{\Delta_\omega} + \frac{\partial y^*}{\partial \hat{v}} \underbrace{\left(\frac{d\hat{v}_m}{dn} - \frac{d\hat{v}_f}{dn} \right)}_{\Delta_v}$$

$\Delta_\omega \neq 0 \Rightarrow$ wage gaps; $\Delta_v \neq 0 \Rightarrow$ senior-track & rejection gaps (since these depend more directly on $\hat{v}$)

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3. **Pay transparency tightens institutional rigidity:** raises scrutiny of deviations from benchmarks $\Rightarrow$ dampens differential responses wherever beliefs are updated unevenly across groups

Experimental Design

Experimental Design

- **May–Nov 2024: 493 recruiters/HR professionals** from a real contractor-hiring platform (U.S. & Canada, hourly rate $\leq$ \$150)
 - Comparable to HR professionals in the CPS on gender and pay; attrition is minimal (**1.7%**) and unrelated to recruiter characteristics
- Each recruiter evaluates **16 candidates** as a paid consultant; hourly wage only, no outcome-based bonus

Design balances two things:

- **Realism:** professional-recruiter input, real resumes, Google Forms
Mimics real recruitment-process outsourcing (Landay & DeArmond 2018; Cappelli 2019; Agan, Cowgill & Gee 2025) [Recruitment](#) [Instructions](#)
- **Bounding deception:** external evaluators only, no observed candidate outcomes

[Recruiter Stats](#)

Procedures

1. Hiring Recruiters (\$63); Employer Profile, Needs, & Instructions



2. 493 hired: Job Advertisement (Job Offer \$130,000), Resume Packet (16); Counteroffers



3. Main Survey: Candidate Evaluations and Recommendations



4. Post-experiment Survey: perceptions about the candidate pool; prevalence of negotiation

Randomization

1. Gender of Candidate (Female/Male Name)

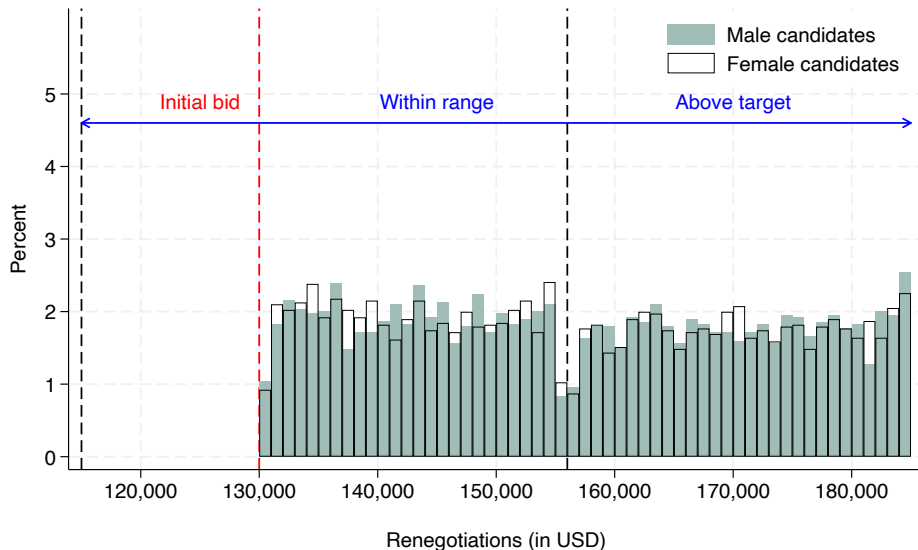
2. Negotiation Intensity (Counteroffer Salaries)

3. Counteroffer Distribution (25%, 50%, 75%)

4. Pay Transparency (Transparency vs No Transparency)

Distribution of Counteroffers

All initial offers: \$130,000; 'Over Target' counteroffers are higher by $\sim$ \$28,000 (20%)



Pay Transparency Treatment

Recruiters were prompted the following depending on cross-firm treatment condition:

Our allocated salary range for these roles is \$115,000 to \$155,000. However, we are open to considering offers outside this range for exceptional candidates.

[Treatment: **Posted Range**] *To adhere to local labor laws concerning pay transparency in certain offices, we have **explicitly mentioned this range** in our job advertisement.*

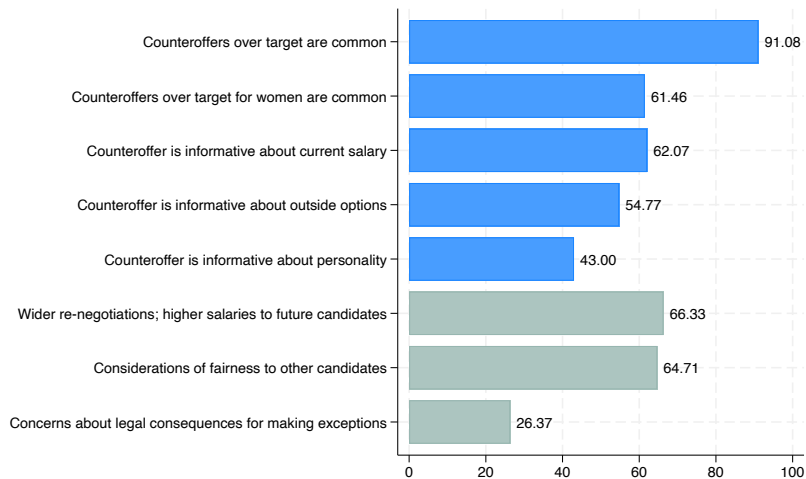
[Treatment: **No Posted Range**] *We **did not mention** the target salary range in the job advertisement.*

Data

- **Main survey** (per candidate) — maps directly onto the model:
 - Perceived skill $\hat{v}$: technical, teamwork, initiative ratings
 - Perceived outside option $\hat{w}$: candidate's other offers, current salary estimate
 - Decisions e.g., (w^*, s^*) : salary offer, senior-track recommendation, response to the counteroffer, WFH days
- **Post-experiment survey**: perceived quality of the candidate pool, market norms, prevalence of negotiation, reasons for reluctance to negotiate

Descriptive Evidence on Negotiation

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91% of recruiters say above-target counteroffers are common overall — but only **62%** say the same for women

The Impact of Negotiation Intensity

Empirical Strategy

- Intensity of negotiation:

$$Y_{ij} = \beta_2 \times \text{OverTarget}_{ij} + \alpha \times X_j + \delta_i + \epsilon_{ij} \quad (1)$$

- Heterogeneity by gender:

$$\begin{aligned} Y_{ij} = & \beta_3 \times \text{Female}_{ij} \times \text{OverTarget}_{ij} + \beta_4 \times \text{Female}_{ij} \\ & + \beta_5 \times \text{OverTarget}_{ij} + \alpha \times X_j + \delta_i + \epsilon_{ij} \end{aligned} \quad (2)$$

- Impact of pay transparency: a triple-difference nesting the same terms with a transparency interaction

Y_{ij} : outcome, candidate i /recruiter j X_j : recruiter controls δ_i : biography FE SEs clustered by recruiter

Higher Counteroffers Signal Both Skill & Outside Options

Variables	Below Target (1)	Over Target (2)	Difference (2)-(1)	p-value
Recommendations				
Salary offer	138,184	152,775	14,567.15*** (390.60)	0.000
Accept counter offer	0.556	0.247	-0.309*** (0.015)	0.000
Reject application	0.077	0.121	0.046*** (0.008)	0.000
Recommends WFH offer	0.586	0.644	0.058*** (0.016)	0.000
Recommend for senior position	0.572	0.661	0.089*** (0.013)	0.000
Market Value and Options				
Current salary estimate	125,237	137,407	12,152.54*** (654.74)	0.000
Best outside offer estimate	139,606	152,907	13,249.12*** (553.14)	0.000
Candidate will likely accept	0.893	0.723	-0.171*** (0.012)	0.000
Skill Assessments				
Technical skills - High	0.800	0.821	0.020* (0.011)	0.072
Team skills - High	0.806	0.818	0.011 (0.011)	0.321
Initiative skills - High	0.814	0.844	0.030*** (0.011)	0.004
N			7,749	
Number of clusters			493	

Figure

Robustness

Attention

Men's Skill Ratings Rise With the Counteroffer; Women's Don't



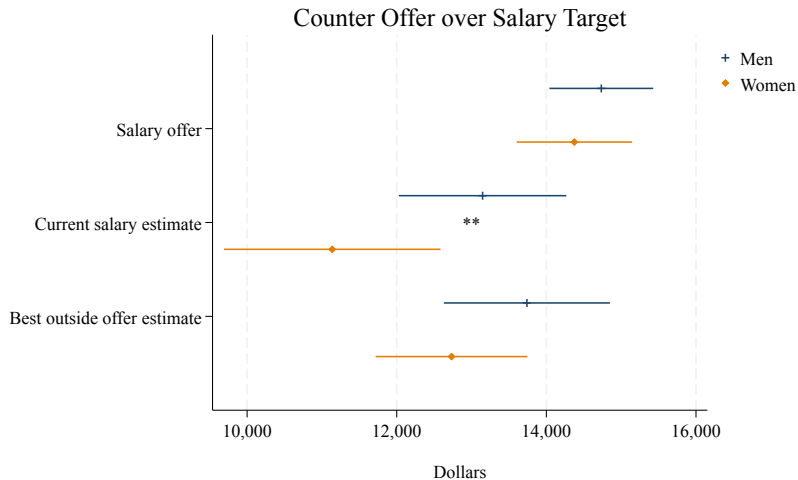
Men +4.3%/ +3.8%/ +5.7% of baseline (tech/team/init.) This drives belief asymmetry behind the senior-track and rejection gaps

[Table](#)

[Robustness](#)

[Gender Overall](#)

Wage Gains from Negotiating Are Symmetric by Gender



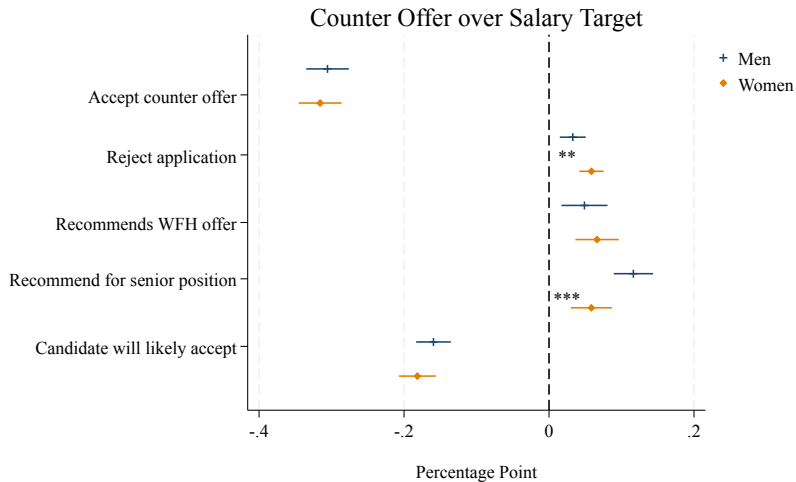
1.6% and 0.77% differences for current salary and outside offer estimates

[Table](#)

[Robustness](#)

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But Advancement and Rejection Diverge Sharply



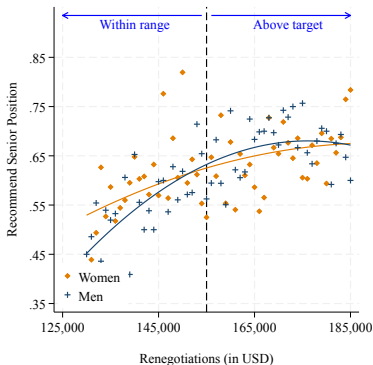
Senior-track 10.6%. Rejection — gap is 31% of mean

Table

Robustness

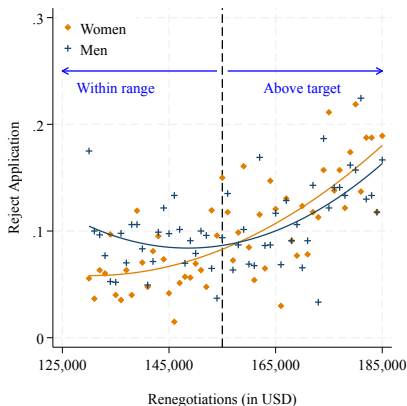
Gender Overall

Negotiating Hard Helps Men's Advancement Odds More



- W are less (more) favored than M for senior roles as they negotiate for more (less)
- Gender gaps are not explained by candidates' age and experience.

Women Pay a Steeper Rejection Penalty for Higher Counteroffers



- Penalty for men with low renegotiations
- Rejection rates increase for everyone, but they rise more sharply for women

The Role of Contextual Factors in Negotiation

Male-Favoring Recruiters

Male-favoring propensity: share of a recruiter's own unprompted top-3 picks that are male, measured on a held-out set of candidates excluded from the analysis below [How?](#)

	Salary Offer	Recommend for Senior Position	Reject Application	Work from Home
Male favoring recruiters	934.409* (523.579)	0.064 (0.040)	-0.026 (0.024)	-0.011 (0.045)
Over target	14723.955*** (833.789)	0.163*** (0.036)	0.050* (0.027)	0.012 (0.039)
Over target × Male favoring recruiters	-327.869 (1014.168)	-0.055 (0.044)	-0.031 (0.032)	0.046 (0.047)
Female CV	520.167 (456.280)	0.072** (0.035)	-0.035* (0.021)	0.021 (0.030)
Female CV × Male favoring recruiters	-872.739 (546.861)	-0.053 (0.041)	0.007 (0.024)	-0.002 (0.035)
Over target × Female CV	556.642 (858.689)	-0.024 (0.047)	-0.001 (0.032)	0.042 (0.044)
Over target × Female CV × Male favoring recruiters	-2154.368** (1048.613)	-0.055 (0.056)	0.065* (0.037)	-0.033 (0.053)
Y mean	144,991	.57	.12	.59
N	5,927	5,927	5,927	5,927

- Rejection penalty for female candidates with counteroffers above target entirely driven by male-favoring recruiters

Recruiters from High Bias Regions

	Salary Offer	Recommend for Senior Position	Reject Application	Work from Home
Gender Bias	-202.610 (515.765)	-0.019 (0.038)	0.018 (0.020)	0.022 (0.046)
Over target	14633.368*** (694.336)	0.068** (0.028)	0.058*** (0.018)	0.038 (0.032)
Over target × Gender Bias	717.998 (977.611)	0.085** (0.040)	-0.031 (0.026)	0.038 (0.045)
Female CV	-360.098 (397.354)	-0.015 (0.026)	0.001 (0.014)	0.025 (0.021)
Female CV × Gender Bias	506.497 (537.544)	0.084** (0.036)	-0.034* (0.020)	-0.012 (0.031)
Over target × Female CV	113.036 (742.707)	0.010 (0.038)	-0.006 (0.022)	0.047 (0.033)
Over target × Female CV × Gender Bias	-1715.177* (1035.121)	-0.122** (0.054)	0.047 (0.033)	-0.028 (0.049)
Y mean	145,728	.6	.1	.63
N	5,571	5,571	5,571	5,571

- Harvard Project Implicit dataset: gender-career
- Women favored for senior-track below target in high-bias MSAs — but this **reverses** above target, and salary recommendations turn lower too

The Impact of Pay Transparency

First Stage: How Did Pay Transparency Matter?

Variables	Effect of Pay Transparency
Concerns regarding pay transparency	
Fear of wider re-negotiations & need of higher salaries to future candidates	0.063 (0.043)
Considerations of fairness to other candidates	0.045 (0.043)
Concerns about potential legal consequences for making exceptions	0.066* (0.040)
<i>N</i>	493

Treated recruiters are **+6.6pp** more likely to cite legal-consequence concerns, **+6.3pp** more likely to cite renegotiation pressure

Transparency Narrows the Gap by Limiting Discretion

	Salary Offer	Recommend for Senior Position	Reject Application	Work from Home
Pay transparency	584.119 (420.194)	0.018 (0.032)	0.015 (0.017)	-0.005 (0.038)
Over target	15076.394*** (624.080)	0.157*** (0.023)	0.034** (0.015)	0.058** (0.027)
Over target × Pay transparency	-529.073 (848.435)	-0.070** (0.034)	-0.008 (0.022)	-0.017 (0.038)
Female CV	118.037 (301.013)	0.062*** (0.021)	-0.023** (0.011)	0.028 (0.019)
Female CV × Pay transparency	-473.673 (436.134)	-0.051* (0.031)	0.005 (0.017)	-0.003 (0.027)
Over target × Female CV	-877.686 (622.958)	-0.110*** (0.031)	0.026 (0.018)	0.029 (0.031)
Over target × Female CV × Pay transparency	797.866 (885.844)	0.091** (0.044)	0.004 (0.027)	-0.022 (0.042)
Y mean	145,638	.62	.099	.62
N	7,749	7,749	7,749	7,749

- Pay transparency moderates the discretion in recommendations for senior positions.

Structural Estimation

Structural Estimation

We use the structural model for:

1. How much of each gap does **belief updating** alone explain?
2. What counteroffer is **optimal** for a candidate?
3. What does **pay transparency** change about the firm's rule?

Decomposition

- **Add residual terms** γ : a further, gender-specific contribution of seniority and wage to the firm's objective, over and under the threshold, **separate from** the belief-driven terms — 8 rates Equation – γ 's?
- Gender enters the model in exactly two places: beliefs $(\hat{v}, \hat{w})$ and γ . Equalize beliefs across gender, recompute (w^*, s^*) from the FOC — whatever gender gap survives is due to γ
- **Senior DiD decomposition** (model total +0.062):

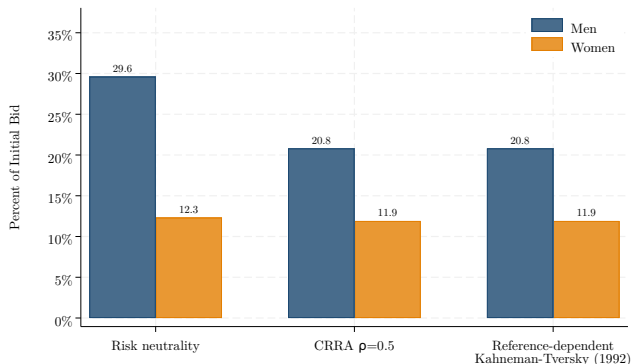
$$\underbrace{+0.040}_{\text{belief} \times \delta, [0.013, 0.064]^*} + \underbrace{+0.022}_{\gamma \text{ residual, } [-0.012, 0.076]} = +0.062$$

- Belief- $\times \delta$ significant for **seniority** and **rejection**; marginally so for **wage**. γ not separately significant for any outcome, pooled.

Optimal Counteroffers: Higher For Men

- Optimal counteroffer $\approx 11\text{--}12\%$ of the initial bid for women (stable across risk preferences), $\approx 20\text{--}30\%$ for men (risk-neutral to curvature-adjusted)
- Gap driven by hiring probability, not compensation: due to man's perceived skill, surplus to firm erodes far less

Robust across three specifications: risk-neutral, CRRA ($\rho = 0.5$), and reference-dependent (Tversky & Kahneman 1992, loss-averse around the \$130K initial bid)



Mechanism: Why Does Pay Transparency Narrow the Senior Gap?

- A general tightening ($\kappa_s : 87.76 \rightarrow 88.28$, $p = 0.11$: grows more cautious about senior recommendations for everyone
- Gender-specific residual vanishing, while beliefs barely move:

Panel A. Pay Secrecy		
Channel	Contribution	95% CI
Baseline (senior DiD)	+0.097***	[+0.048, +0.165]
Belief $\times \delta$	+0.037*	[-0.002, +0.074]
Residual (γ)	+0.061**	[+0.011, +0.129]
Panel B. Pay Transparency		
Baseline (senior DiD)	+0.035	[-0.033, +0.088]
Belief $\times \delta$	+0.043**	[+0.006, +0.077]
Residual (γ)	-0.009	[-0.063, +0.038]

$\delta : 0.276 \rightarrow 0.275$; $\alpha : 0.912 \rightarrow 0.911$; $\tau : 3.11 \rightarrow 2.96$ — essentially unchanged (all $p > 0.6$) $\Rightarrow$ transparency works through **discretion**, not beliefs or valuation

Conclusion

- Negotiation contributes to gender differences in hiring **beyond initial selection**
 - Negotiation **shapes beliefs** beliefs about skill/outside options (Burdett & Mortensen 1998; Card, Cardoso & Kline 2016)
 - First field evidence on bargaining under varying transparency regimes (Mas 2017; Cullen & Pakzad-Hurson 2023)
- Implications:
 1. **Measuring the gender pay gap** requires looking past initial stage/wage alone (Bertrand et al. 2017; Kline et al. 2021, 2022).
 2. The gap is belief-driven, not purely behavioral $\Rightarrow$ encouraging women to negotiate more (“lean in”) is insufficient if employers interpret identical behavior differently by gender
 3. **Pay transparency** attenuates the gap by constraining employer discretion — even on margins transparency laws don’t directly target

Negotiation, Employer Demand, and Gender Disparities

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Appendix

Firm's Decision

- **Organizational constraints:** the wage benchmark blends the institutional anchor and the inferred outside option; seniority carries a quadratic cost:

$$\bar{w}_g^{\text{eff}}(n) = \alpha \hat{w}_g(n) + (1 - \alpha) \bar{w}^{\text{inst}}, \quad C_w(w) = \frac{\kappa_w}{2}(w - \bar{w}^{\text{eff}})^2, \quad C_s(s) = \frac{\kappa_s}{2}s^2$$

- **Surplus:** $S(v, w, s) = v(1 + \delta s) - w - C_w(w) - C_s(s)$
- **Profit:** firm chooses (w, s) to maximize

$$\Pi(w, s \mid n, g) = \int \int \left[\Lambda(w + \tau s - \omega) S(v, w, s) - (1 - \Lambda(w + \tau s - \omega)) c_R \right] f_g(v, \omega \mid n) dv d\omega$$

firm extends an offer only if $\Pi(w^*, s^* \mid n, g) \geq \bar{V}$

- We derive optimal (w^*, s^*) and explore the sensitivity of the FOC to v and ω

Benjamin [REDACTED]**Candidate Information**

Candidate ID: CBEB_5012 Mailing Address: [REDACTED]

ZIP: [REDACTED] Phone : [REDACTED] City/State: [REDACTED]

Email: [REDACTED] URL: [REDACTED]

Are you legally authorized to work in the US? Y Are you over the age of 18? Y

Are you willing to relocate? Y Will you require visa sponsorship? N

Employment History (Last three jobs)**Title:** Software Engineer**Company name:** In-Depth Engineering**Location:** Columbia, MD **Dates:** 2022-05 - Present

- Identify and patch software bugs within the AEGIS Combat System, utilizing C/C++, Java and Git for issue tracking and version control
- Develop full stack web applications that track shared engineering design documents
- Create and deploy REST endpoints that accept and serve engineering design drawings
- Migrate Access databases to MySQL, improving scalability and performance

Title: Software Engineer**Company name:** Procraft, LLC**Location:** Remote **Dates:** 2021-02 - 2022-05

- Managed and maintained the entire codebase for Soulvoyor.
- Merged the Steamworks API throughout the code to allow the user's Steam client to interact with the game.
- Designed a fully-fledged client prediction and server reconciliation framework entirely within C# to reliably ensure state across all clients, and to reduce RTT network latency by an average of 22ms.
- Created custom editor tools to reduce the asset/model/texture iteration, importation, and integration workload from over 10 minutes of repetitive tasks, down to the simple click of a button.
- Orchestrated development for mobile devices, focusing on gameplay mechanics, performance optimizations, and ergonomic UI which resulted in a runtime performance improvement by an average of 54 FPS.

Title: Software Developer**Company name:** Telesis**Location:** Baltimore, MD **Dates:** 2018-09 - 2021-02

Recruitment Email

I hope this message finds you well. I'm reaching out with an opportunity for a short-term recruiting project that requires a brief 1-hour commitment with \$50 compensation. My client, a specialized software company focused on AI-driven solutions, is currently in a mass hiring phase for computer software engineer roles across Chicago, Boston, Austin, and Seattle. We're seeking someone with an HR/recruiting background to assist in finalizing compensation packages for key positions within the tech team. The task will take approximately 50 minutes, followed by a 10-minute debriefing session. This project is posted on [the platform name], where you would work through the platform. If you're interested, I'd love to provide more details. Looking forward to hearing from you.

Design

Instructions

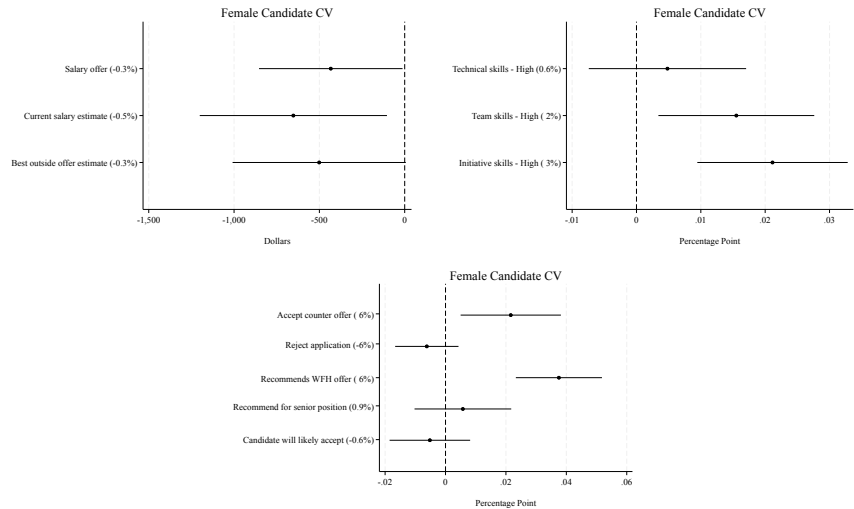
Please review the following information carefully, as it contains important details about the task at hand. We are a specialized software company dedicated to crafting AI-driven solutions. As a venture-backed, cutting-edge firm, we are experiencing rapid growth and have numerous exciting openings across multiple locations. Currently, we're in a mass hiring period for computer software engineer roles in Chicago, Boston, Austin, and Seattle. Given the scale of our hiring needs, we're seeking your expertise to finalize compensation packages for several key positions within our tech firm. Please review the attached job posting, which provides detailed information regarding the responsibilities and requirements for these positions. Our allocated salary range for these roles is \$115,000 to \$155,000. However, we are open to considering offers outside this range for exceptional candidates. To adhere to local labor laws concerning pay transparency in certain offices, we have explicitly mentioned this range in our job advertisement. We have extended informal offers to candidates, with an initial offer of \$130,000. However, we have received indications from some of the candidates that they may be open to negotiation and have suggested counteroffers. With your insights, we aim to navigate these negotiations effectively, ensuring competitive compensation packages tailored to each candidate's unique profile. All candidates have successfully cleared our rigorous technical assessments.

Design

Summary Statistics - Recruiters

Variables	Mean	SD	Min	Max	N
Recruiter Profiles					
Female	0.736	0.441	0	1	493
White	0.533	0.499	0	1	493
Black	0.247	0.432	0	1	493
Total Hours	366.207	1,266.645	0	11,294	493
Hourly Rate	64.130	30.709	10	150	493
Bachelor degree	0.892	0.310	0	1	493
5 years of experience or more	0.769	0.422	0	1	493
Resume characteristics					
Female CV	0.505	0.057	0	1	493
Total Experience (Month)	53.761	5.334	19	70.4	493
Counteroffer over target	0.514	0.211	.143	1	493
Percent over target: 25	0.325	0.469	0	1	493
Percent over target: 50	0.310	0.463	0	1	493
Percent over target: 75	0.365	0.482	0	1	493
Pay Transparency Advert	0.513	0.500	0	1	493

Gender Differences



Gender Differences

Variables	Male Candidate (1)	Female Candidate (2)	Difference (2)-(1)	p-value
Recommendations				
Salary offer	145,880	145,400	-433.14* (255.18)	0.090
Accept counter offer	0.388	0.408	0.022** (0.010)	0.032
Reject application	0.102	0.096	-0.006 (0.006)	0.331
Recommends WFH offer	0.598	0.633	0.038*** (0.009)	0.000
Recommend for senior position	0.616	0.619	0.006 (0.010)	0.554
Market Value and Options				
Current salary estimate	131,816	131,099	-652.49* (332.87)	0.051
Best outside offer estimate	146,695	146,100	-501.12 (308.00)	0.104
Candidate will likely accept	0.809	0.804	-0.005 (0.008)	0.522
Skill Assessments				
Technical skills - High	0.809	0.813	0.005 (0.007)	0.517
Team skills - High	0.805	0.819	0.016** (0.007)	0.035
Initiative skills - High	0.819	0.839	0.021*** (0.007)	0.003
N			7,749	
Number of clusters			493	

[Figure](#)
[Robustness](#)
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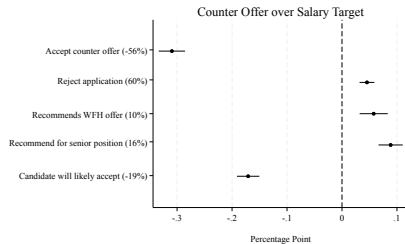
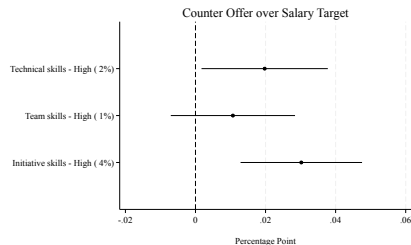
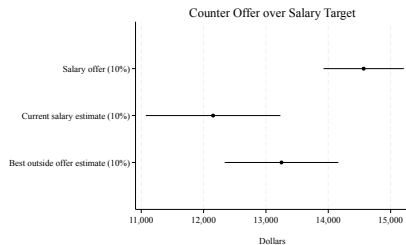
Gender Differences in Returns to More Intense Negotiation

	Female CV			Male CV			Difference F-M	
	Below Target (1)	Difference (2)	p-value (3)	Below Target (4)	Difference (5)	p-value (6)	Difference (7)	p-value (8)
Recommendations								
Salary offer	138,123	14,374.08*** (467.43)	0.000	138,247	14,734.91*** (420.78)	0.000	-379 (428.08)	0.376
Accept counter offer	0.568	-0.316*** (0.018)	0.000	0.544	-0.306*** (0.018)	0.000	-0.009 (0.021)	0.659
Reject application	0.066	0.059*** (0.010)	0.000	0.087	0.033*** (0.011)	0.003	0.027** (0.013)	0.047
Recommends WFH offer	0.599	0.066*** (0.018)	0.000	0.572	0.049** (0.019)	0.012	0.017 (0.021)	0.413
Recommend for senior position	0.590	0.058*** (0.017)	0.001	0.554	0.116*** (0.016)	0.000	-0.059*** (0.021)	0.005
Market Value and Options								
Current salary estimate	125,513	11,137.54*** (878.06)	0.000	124,951	13,147.81*** (679.04)	0.000	-2,100** (905.40)	0.021
Best outside offer estimate	139,677	12,732.72*** (615.30)	0.000	139,534	13,740.06*** (673.44)	0.000	-1,074 (683.45)	0.117
Candidate will likely accept	0.897	-0.182*** (0.015)	0.000	0.890	-0.159*** (0.015)	0.000	-0.023 (0.017)	0.175
Skill Assessments								
Technical skills - High	0.810	0.004 (0.014)	0.760	0.790	0.034** (0.015)	0.020	-0.030 (0.018)	0.101
Team skills - High	0.823	-0.008 (0.014)	0.536	0.788	0.030** (0.015)	0.039	-0.039** (0.018)	0.033
Initiative skills - High	0.832	0.016 (0.013)	0.208	0.795	0.045*** (0.015)	0.002	-0.029* (0.017)	0.093
N		3,905			3,844			

Variables	Baseline		With > Controls		With Bio FE		With Recruiter FE	
	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Recommendations								
Salary offer	-479.79* (259.33)	0.065	-472.40* (259.44)	0.069	-433.14* (255.18)	0.090	-510.95** (256.63)	0.047
Accept counter offer	0.020* (0.010)	0.059	0.020* (0.010)	0.059	0.022** (0.010)	0.032	0.017 (0.010)	0.109
Reject application	-0.006 (0.006)	0.373	-0.006 (0.006)	0.354	-0.006 (0.006)	0.331	-0.005 (0.006)	0.407
Recommends WFH offer	0.035*** (0.009)	0.000	0.035*** (0.009)	0.000	0.038*** (0.009)	0.000	0.033*** (0.009)	0.000
Recommend for senior position	0.004 (0.010)	0.694	0.004 (0.010)	0.717	0.006 (0.010)	0.554	0.003 (0.010)	0.791
Market Value and Options								
Current salary estimate	-717.75** (337.61)	0.034	-718.46** (339.80)	0.035	-652.49* (332.87)	0.051	-758.37** (329.54)	0.022
Best outside offer estimate	-594.88* (314.87)	0.059	-587.53* (316.90)	0.064	-501.12 (308.00)	0.104	-660.94** (308.17)	0.032
Candidate will likely accept	-0.005 (0.008)	0.545	-0.005 (0.008)	0.539	-0.005 (0.008)	0.522	-0.005 (0.008)	0.558
Skill Assessments								
Technical skills - High	0.003 (0.007)	0.663	0.003 (0.007)	0.670	0.005 (0.007)	0.517	0.003 (0.007)	0.714
Team skills - High	0.014* (0.007)	0.067	0.013* (0.007)	0.072	0.016** (0.007)	0.035	0.011 (0.007)	0.131
Initiative skills - High	0.020*** (0.007)	0.004	0.020*** (0.007)	0.005	0.021*** (0.007)	0.003	0.018** (0.007)	0.010
N	7,749		7,749		7,749		7,745	
Number of clusters	493		493		493		493	
Controls	No		Yes		Yes		No	
Bio FE	No		No		Yes		No	
Recruiters FE	No		No		No		Yes	

Variables	Baseline		With Controls		With Bio FE		With Recruiter FE	
	Difference	p-value	Difference	p-value	Difference	p-value	Difference	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Recommendations								
Salary offer	14,591.21*** (396.32)	0.000	14,575.53*** (393.67)	0.000	14,567.15*** (390.60)	0.000	14,043.87*** (370.45)	0.000
Accept counter offer	-0.309*** (0.015)	0.000	-0.309*** (0.015)	0.000	-0.309*** (0.015)	0.000	-0.339*** (0.014)	0.000
Reject application	0.044*** (0.008)	0.000	0.044*** (0.008)	0.000	0.046*** (0.008)	0.000	0.053*** (0.008)	0.000
Recommends WFH offer	0.058*** (0.016)	0.000	0.058*** (0.015)	0.000	0.058*** (0.016)	0.000	0.067*** (0.011)	0.000
Recommend for senior position	0.088*** (0.014)	0.000	0.089*** (0.014)	0.000	0.089*** (0.013)	0.000	0.094*** (0.012)	0.000
Market Value and Options								
Current salary estimate	12,170.52*** (670.58)	0.000	12,163.75*** (656.49)	0.000	12,152.54*** (654.74)	0.000	13,198.11*** (497.31)	0.000
Best outside offer estimate	13,301.13*** (578.18)	0.000	13,251.93*** (558.98)	0.000	13,249.12*** (553.14)	0.000	13,238.70*** (441.28)	0.000
Candidate will likely accept	-0.170*** (0.012)	0.000	-0.170*** (0.012)	0.000	-0.171*** (0.012)	0.000	-0.199*** (0.012)	0.000
Skill Assessments								
Technical skills - High	0.021* (0.011)	0.065	0.022* (0.011)	0.055	0.020* (0.011)	0.072	0.020** (0.009)	0.019
Team skills - High	0.012 (0.011)	0.272	0.012 (0.011)	0.274	0.011 (0.011)	0.321	0.002 (0.008)	0.821
Initiative skills - High	0.031*** (0.011)	0.005	0.031*** (0.011)	0.003	0.030*** (0.011)	0.004	0.024*** (0.008)	0.003
N	7,749		7,749		7,749		7,745	
Number of clusters	493		493		493		493	
Controls	No		Yes		Yes		No	
Bio FE	No		No		Yes		No	
Recruiters FE	No		No		No		Yes	

Intensity of Negotiation



Variables	Baseline			With Controls			With Bio FE			With Recruiter FE		
	Female CV	Male CV	Difference	Female CV	Male CV	Difference	Female CV	Male CV	Difference	Female CV	Male CV	Difference
Recommendations												
Salary offer	14,353.49*** (484.28)	14,827.11*** (425.38)	-473.62 (449.48)	14,333.81*** (479.26)	14,808.60*** (423.78)	-465.23 (444.27)	14,377.57*** (468.18)	14,750.51*** (421.52)	-379.02 (428.08)	14,028.03*** (462.49)	14,183.18*** (440.57)	-505.82 (413.96)
Accept counter offer	-0.315*** (0.018)	-0.302*** (0.021)	-0.014 (0.018)	-0.315*** (0.018)	-0.302*** (0.021)	-0.013 (0.021)	-0.315*** (0.018)	-0.305*** (0.021)	-0.009 (0.018)	-0.340*** (0.021)	-0.342*** (0.018)	-0.007 (0.021)
Reject application	0.059*** (0.010)	0.029*** (0.011)	0.029** (0.014)	0.059*** (0.010)	0.030*** (0.014)	0.029** (0.014)	0.059*** (0.010)	0.033*** (0.011)	0.027** (0.013)	0.068*** (0.011)	0.046*** (0.011)	0.027** (0.013)
Recommends WFH offer	0.066*** (0.018)	0.050** (0.020)	0.016 (0.021)	0.067*** (0.018)	0.049** (0.019)	0.017 (0.021)	0.066*** (0.018)	0.048** (0.019)	0.017 (0.021)	0.067*** (0.014)	0.061*** (0.014)	0.008 (0.017)
Recommend for senior position	-0.032 (0.017)	0.036** (0.016)	-0.068*** (0.022)	-0.032 (0.017)	0.036** (0.016)	-0.069*** (0.022)	-0.034** (0.017)	0.034** (0.016)	-0.068*** (0.022)	-0.044** (0.018)	0.034** (0.017)	-0.067*** (0.022)
Market Value and Options												
Current salary estimate	11,015.66*** (920.45)	13,334.72*** (709.41)	-2,319.07** (950.98)	11,052.74*** (902.75)	13,266.39*** (686.82)	-2,212.36** (924.15)	11,154.16*** (880.85)	13,175.99*** (680.67)	-2,099.97** (905.40)	13,098.74*** (640.57)	13,492.66*** (591.09)	-1,209.12* (641.96)
Best outside offer estimate	12,681.56*** (655.94)	13,923.24*** (714.28)	-1,241.68* (734.66)	12,634.68*** (637.57)	13,851.85*** (689.23)	-1,205.74* (715.75)	12,734.99*** (616.88)	13,757.60*** (675.63)	-1,074.23 (683.45)	13,195.29*** (569.63)	13,361.41*** (571.68)	-898.28 (600.73)
Candidate will likely accept	-0.183*** (0.016)	-0.158*** (0.015)	-0.025 (0.017)	-0.183*** (0.016)	-0.158*** (0.015)	-0.025 (0.017)	-0.182*** (0.016)	-0.159*** (0.015)	-0.023 (0.017)	-0.215*** (0.015)	-0.180*** (0.014)	-0.027 (0.016)
Skill Assessments												
Technical skills - High	0.005 (0.014)	0.037** (0.015)	-0.032* (0.019)	0.006 (0.014)	0.037** (0.015)	-0.032* (0.019)	0.005 (0.014)	0.034** (0.015)	-0.030 (0.018)	0.007 (0.013)	0.029** (0.012)	-0.034** (0.016)
Team skills - High	-0.008 (0.014)	0.033** (0.015)	-0.041** (0.019)	-0.009 (0.014)	0.033** (0.015)	-0.042** (0.019)	-0.008 (0.014)	0.031** (0.015)	-0.039** (0.018)	-0.017 (0.013)	0.025 (0.013)	-0.040** (0.017)
Initiative skills - High	0.015 (0.013)	0.047*** (0.015)	-0.031* (0.018)	0.016 (0.013)	0.047*** (0.015)	-0.032* (0.018)	0.016 (0.013)	0.045*** (0.014)	-0.029* (0.017)	0.015 (0.012)	0.031** (0.012)	-0.032** (0.015)
N	3,905	3,844	7,749	3,905	3,844	7,749	3,905	3,844	7,749	3,903	3,839	7,745
Number of clusters	493	493	493	493	493	493	493	493	493	493	493	493
Controls	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Bio FE	No	No	No	No	No	No	Yes	Yes	Yes	No	No	No
Recruiters FE	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes

Attention Test

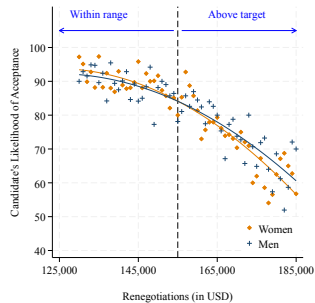
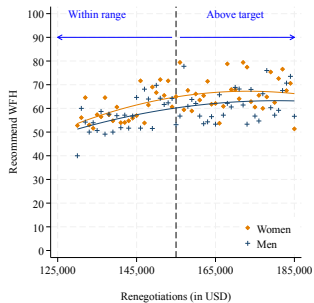
Leadership index using Leadership and Management Keyword words in CVs.

Correlation between leadership keyword and skill assessment

	Technical Skills			Team Skills			Initiative Skills		
	(1) Full	(2) Female	(3) Male	(4) Full	(5) Female	(6) Male	(7) Full	(8) Female	(9) Male
Abov. Median Leadership	0.026*** (0.008)	0.020 (0.012)	0.033*** (0.012)	0.059*** (0.009)	0.058*** (0.013)	0.060*** (0.013)	0.013* (0.008)	0.006 (0.011)	0.020 (0.013)
Constant	0.796*** (0.011)	0.802*** (0.013)	0.791*** (0.013)	0.779*** (0.012)	0.786*** (0.014)	0.772*** (0.014)	0.822*** (0.012)	0.836*** (0.013)	0.808*** (0.014)
Observations	7,749	3,905	3,844	7,749	3,905	3,844	7,749	3,905	3,844

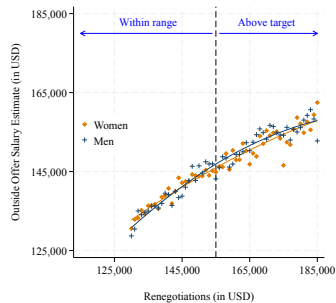
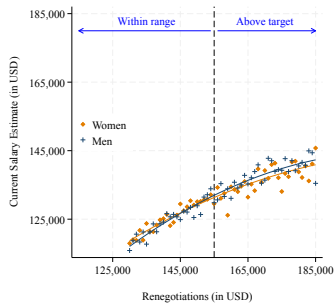
Skill evaluations are correlated with words in CVs.

Work-From-Home and Likelihood of Acceptance



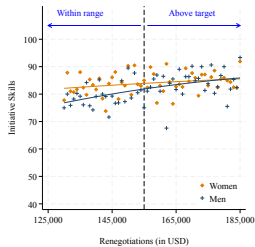
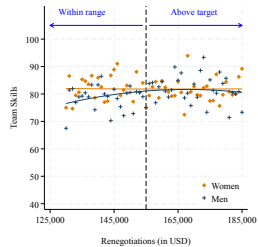
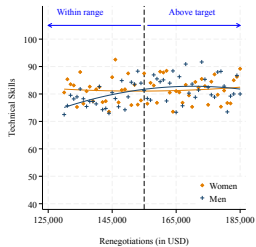
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Current Salary and Outside Options



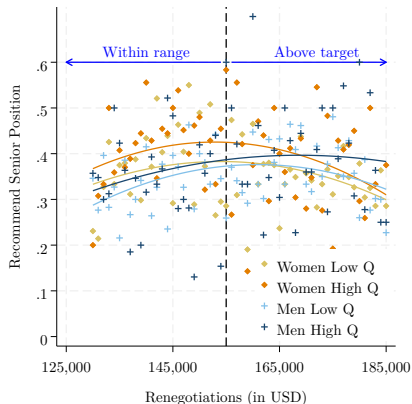
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Skills



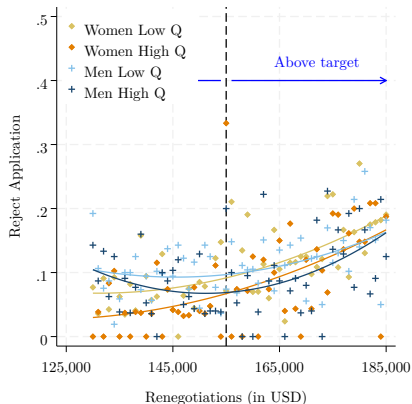
Heterogeneity by Quality Level - Senior Position

- Quality measure: Composite index of computer Science degree, years of experience, senior-level experience based on job title
- Patterns driven by high-quality candidates



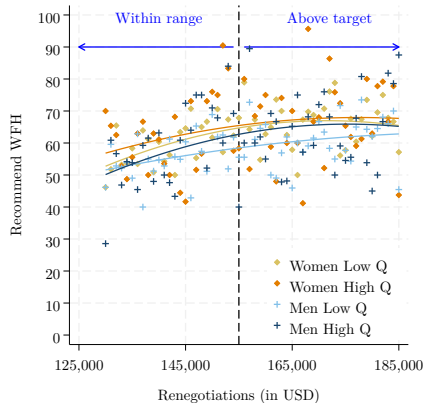
Heterogeneity by Quality Level - Rejection Rate

- Quality measure: Composite index of computer Science degree, years of experience, senior-level experience based on job title
- Patterns driven by high-quality candidates

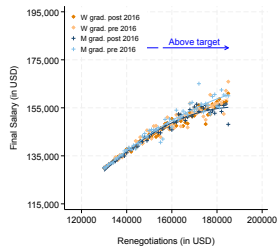
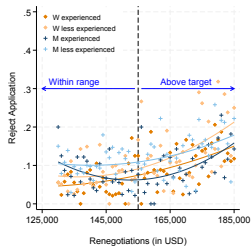
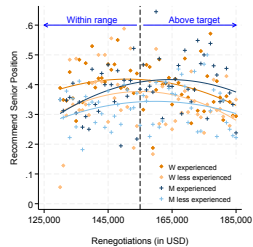


Heterogeneity by Quality Level - Work from Home

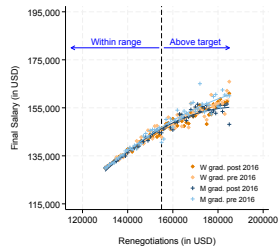
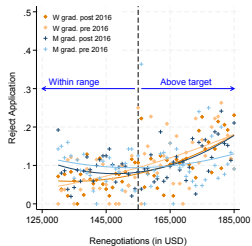
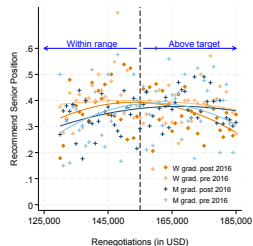
- No differences in slope by quality-level



By Candidate's Experience Level



By Candidate's Year of Graduation

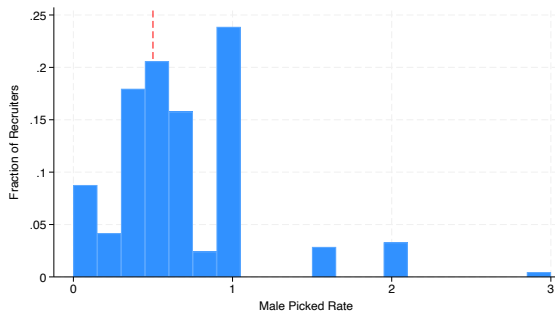


Distribution of Male Propensity Across Recruiters

Recruiters named their own top 3 favorites, unprompted, with no reference to salary or negotiation

1. Pool the 6 resumes named as a top pick most often across all recruiters
2. For each recruiter: share of those (male-named) top-6 resumes they picked, out of those shown to them
3. These same 6 candidates are **excluded** from the heterogeneity regressions — score and outcome never share a candidate

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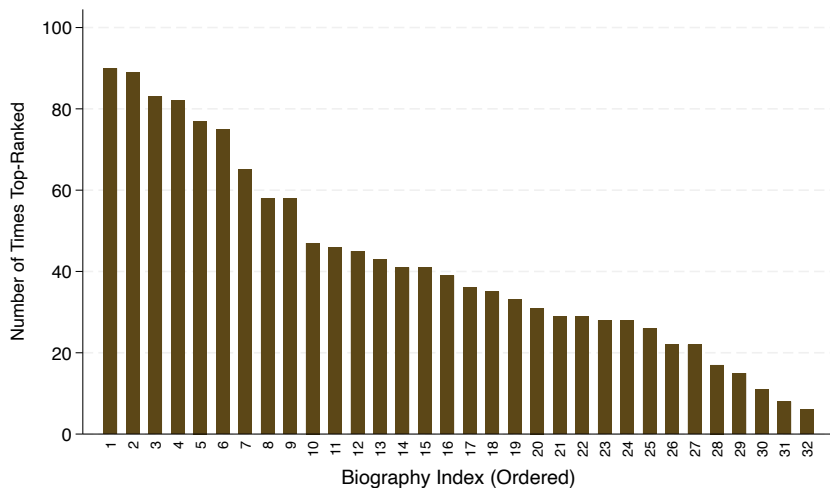
Female Recruiters

	Salary Offer	Recommend for Senior Position	Reject Application	Work from Home
Female recruiters	302.438 (483.931)	0.010 (0.038)	-0.002 (0.020)	0.117*** (0.041)
Over target	15992.821*** (843.628)	0.132*** (0.035)	0.047** (0.023)	0.114*** (0.036)
Over target × Female recruiters	-1612.430* (974.027)	-0.015 (0.040)	-0.023 (0.026)	-0.089** (0.042)
Female CV	35.818 (475.710)	0.054* (0.031)	-0.018 (0.019)	0.070*** (0.025)
Female CV × Female recruiters	-224.809 (534.152)	-0.024 (0.036)	-0.004 (0.022)	-0.059** (0.029)
Over target × Female CV	396.806 (861.602)	-0.077* (0.045)	0.022 (0.027)	-0.036 (0.042)
Over target × Female CV × Female recruiters	-1184.367 (1004.005)	0.019 (0.052)	0.009 (0.032)	0.072 (0.049)
Y mean	145,638	.62	.099	.62
N	7,749	7,749	7,749	7,749

- No differential effect by recruiters' gender.
- No significant effects of recruiters' rate or experience (5 years or more).

Distribution of Biographies Mentioned as Top by Recruiters

More job experience is a predictor [Back](#)



What We Estimate and Fit: Firm's Response to Beliefs

Minimum distance: match 60 cell moments ($2 \text{ genders} \times 5 \text{ ask quintiles} \times 6 \text{ outcomes}$) to 38 parameters — 20 pin beliefs exactly to their own survey cell-means; the other 18 (10 firm-side + 8 γ) jointly fit the remaining 40 moments: wage, seniority, acceptance, rejection

Model fit and estimates:

- Matches every targeted moment within sampling error, including the senior and rejection gaps
- $\delta = 0.27$: a senior placement - skill complementarity
- Wage-setting is far more rigid: a \$5K wage deviation costs \$135.5K in lost surplus — more than moving seniority across its **entire range** (\$44K)

Full Parameter Table

Fit Table

The 6 Outcomes and 38 Parameters

Six outcomes, matched separately for each of 10 cells (2 genders $\times$ 5 ask quintiles):

1. Perceived skill $\hat{v}$
2. Perceived outside option $\hat{w}$
2. Wage offer w
4. Senior-track recommendation s
3. Acceptance likelihood
6. Rejection

$10 \times 6 = 60$ moments

38 parameters, in three blocks:

- **20 belief cell-values** ($\hat{v}_c, \hat{w}_c$), $c = 1, \dots, 10$ — nonparametric, set to the cell's own survey mean; match outcomes 1–2 exactly
- **10 firm-side:** $\delta, \pi_v, \kappa_w, \kappa_s, \alpha, \tau, c_R$, plus noise scales $\sigma_{\text{struct}}, \sigma_R, \sigma_{\text{acc}}$ — govern outcomes 3–6
- **8 γ 's:** $\gamma_{fo}, \gamma_{fu}, \gamma_{mo}, \gamma_{mu}$ (seniority) and $\gamma_{fo}^w, \gamma_{fu}^w, \gamma_{mo}^w, \gamma_{mu}^w$ (wage) — also govern outcomes 3–6, over and under \$155K

$20 + 10 + 8 = 38$ parameters, 60 moments, 22 overidentifying restrictions

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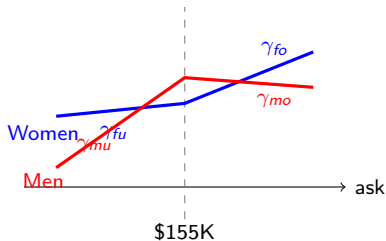
What Are the γ 's?

How they enter profit — as new additive terms on top of the baseline surplus:

$$B = \underbrace{\pi_v \hat{v}(1 + \delta s) - w - \frac{\kappa_w}{2}(w - \bar{w}_{\text{eff}})^2 - \frac{\kappa_s}{2}s^2}_{\text{baseline surplus}} - \boxed{g_s s + g_w(w - \bar{w}_{\text{eff}})}$$

where $g_i = \frac{1}{15} [\gamma_{fo}^i F(a-155)_+ + \gamma_{fu}^i F(155-a)_+ + \gamma_{mo}^i M(a-155)_+ + \gamma_{mu}^i M(155-a)_+]$, F, M gender indicators, a the ask, \$155K the posted-range top

The slope — g_s is piecewise-linear in the ask, kinked at \$155K, with a separate slope by gender and direction (illustrative, not to scale):



Key Parameter Estimates

Estimation

Parameter	Estimate	95% CI
<i>Production and rigidity</i>		
δ	0.2737	[+0.2592, +0.2864]
κ_W	10.84	[+9.43, +11.93]
κ_S	88.19	[+85.50, +88.44]
α	0.91	[+0.89, +0.92]
τ	2.98	[+2.77, +3.37]
c_R	4.01	[+3.17, +4.80]
N		7,733

Model Fit

Outcome	Cell mean		Gender DiD	
	Data	Model	Data	Model
Perceived skill	0.817	0.816	+0.041 (0.017)	+0.041 (0.014)
Outside option (\$K)	146.4	145.9	+1.62 (0.69)	+0.81 (0.47)
Wage offer (\$K)	145.6	145.6	+0.57 (0.43)	+0.76 (0.45)
Seniority recommendation	0.617	0.618	+0.081 (0.024)	+0.062 (0.022)
Acceptance prob.	0.807	0.807	+0.025 (0.017)	+0.017 (0.016)
Rejection prob.	0.099	0.098	-0.037 (0.014)	-0.044 (0.014)

- The two DiDs that matter for the decomposition fit tightly: senior gap +0.062 (model) vs. +0.081 (data); rejection gap -0.044 vs. -0.037 — both within one bootstrap SE
- Wage DiD is noisier and less well pinned down (data SE $\approx$ \$0.43K), but this doesn't bear on the seniority/rejection results

By Candidates' Experience Level

	Salary Offer	Recommend for Senior Position	Reject Application	Work from Home
Experienced	1447.336*** (335.409)	0.102*** (0.024)	-0.031** (0.014)	0.034 (0.023)
Over target	13718.341*** (557.110)	0.111*** (0.025)	0.035** (0.016)	0.053** (0.026)
Over target × Experienced	2104.639*** (654.821)	0.021 (0.030)	-0.010 (0.020)	-0.007 (0.033)
Female CV	279.118 (331.832)	0.028 (0.023)	-0.027* (0.014)	0.015 (0.022)
Female CV × Experienced	-761.177 (489.876)	0.017 (0.032)	0.014 (0.018)	0.022 (0.032)
Over target × Female CV	-946.346 (681.131)	-0.042 (0.033)	0.032 (0.021)	0.046 (0.031)
Over target × Female CV × Experienced	1007.449 (995.662)	-0.037 (0.043)	-0.007 (0.027)	-0.056 (0.044)
Y mean	145,638	.62	.099	.62
N	7,749	7,749	7,749	7,749

By Candidates' Year of Graduation

	Salary Offer	Recommend for Senior Position	Reject Application	Work from Home
Young	-765.436** (348.065)	-0.051* (0.027)	-0.009 (0.015)	0.043* (0.026)
Over target	15639.644*** (668.749)	0.101*** (0.027)	0.016 (0.017)	0.073** (0.031)
Over target × Young	-1225.319 (755.203)	0.031 (0.033)	0.021 (0.021)	-0.037 (0.034)
Female CV	-522.325 (398.431)	0.046* (0.025)	-0.026 (0.016)	0.072*** (0.024)
Female CV × Young	614.381 (469.551)	-0.013 (0.032)	0.008 (0.020)	-0.069** (0.030)
Over target × Female CV	-1097.584 (860.450)	-0.069* (0.036)	0.056** (0.025)	-0.051 (0.037)
Over target × Female CV × Young	923.707 (1051.038)	0.008 (0.044)	-0.041 (0.029)	0.103** (0.045)
Y mean	145,638	.62	.099	.62
N	7,749	7,749	7,749	7,749

Quality of the Pool

