Firm Pay and Worker Search

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Motivation

A large literature studies how wages and amenities vary across workers and firms

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What do workers think?

- Do workers believe in a frictionless competitive model?
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- Do these beliefs affect how workers search for jobs?
- Is lack of information a plausible explanation for lack of mobility?

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Whether workers have and use firm-specific information matters for policy & theory

- Information frictions give firms monopsony power (Manning, 2003)
- Variety of policy interventions directly target worker information (Council of Economic Advisors, 2016)
- Directed vs. random search

This Paper

1. **What do workers believe about firm pay?**

2. **Do these beliefs affect workers' search behavior?**

3. **What does this tell us about mobility?**

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- Surveyed >10k full-time German workers through the IAB.
- Developed an infrastructure that allows us to link workers' answers about specific, named firms to data, incl. admin data on those firms.
- Asked workers what they think they would make at specific outside firms.

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- Asked workers how likely they would be to search if outside pay were X% higher.
- Provided firm-specific hypothetical choice experiments: rank hypothetical offers with randomized raises.

Preview of Results

1. Workers do not believe in a uniform outside option.

- About half of workers report knowing wages at time of application.
- Workers expect their wages would vary across firms, holding position fixed.
- There are "firm effects" in workers' beliefs.
- Expected wages and wage premia are correlated with admin data predictions.

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3. Many workers are not marginal to their current firm.

- Switching costs are 7-18% of a worker's annual salary.
- Amenity valuations differ between insiders and outsiders.

Related Literature

Ethnographic Research on the Labor Market

- e.g. Myers and Shultz (1951); Reynolds (1951); Rees and Shultz (1970)
- This paper: compare workers' preferences and beliefs to admin. data

Firm Wage Effects and Amenities

- e.g. Abowd et al. (1999); Card et al. (2013); Song et al. (2019); Rosen (1986); Sorkin (2018)
- This paper: workers expect firms to vary in wages and amenities, and believe $\text{cov}(a_j, \psi_j) > 0$

Workers' Information About the Labor Market

- e.g. Reynolds (1951); Caldwell and Harmon (2019); Jäger et al. (2024); Cullen (2023)
- This paper: a large share of workers have information on what specific outside firms would pay

Directed Search and Queuing

- e.g. Holzer et al. (1991); Banfi and Villena-Roldan (2019); Marinescu and Wolthoff (2020); Belot et al. (2022); He et al. (2023)
- This paper: workers are more likely to consider high wage firms and anticipate queuing

Data

Worker Survey and Linkages

Fielded a survey to full-time German workers between 25 and 50

- Invitations sent from the IAB by mail; survey completed online
- Initial survey (11.4% response rate) conducted in 2022
- Follow-up survey (51% response rate) conducted in spring 2024
- Randomized incentives to account for selection into non-response
- Over-sampled workers at firms surveyed in Caldwell, Haegele and Heining (2024)

Linked the ~10k worker-level responses to IAB Social Security records

- Worker histories, occupation and industry codes, AKM effects (Bellmann et al., 2020)

Constructed a novel linkage between workers' responses about specific firms and:

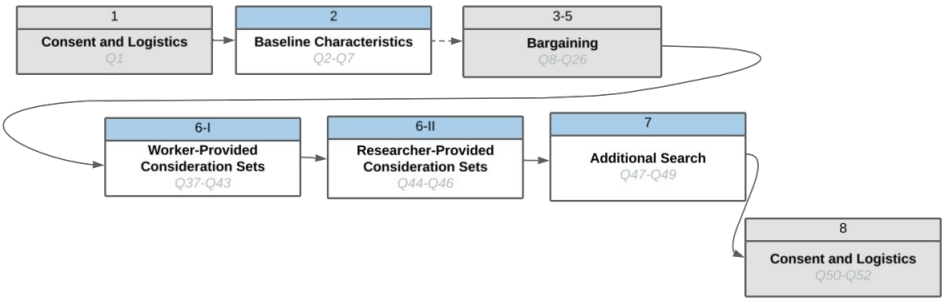
- Social Security records and wage premia associated with those firms
- ORBIS and Kununu

Descriptive Statistics

	Initial Wave		Initial and Follow-Up	
	Mean	Std. Dev.	Mean	Std. Dev.
	(1)	(2)	(3)	(4)
Demographics				
Female	0.40	(0.49)	0.37	(0.48)
Age	31.13	(5.18)	31.31	(5.19)
German Citizen	0.89	(0.32)	0.92	(0.28)
College Degree	0.53	(0.50)	0.61	(0.49)
Apprenticeship	0.37	(0.48)	0.31	(0.46)
Employment				
Daily Pay (Imputed)	136.06	(47.81)	143.03	(47.66)
Censored Pay	0.06	(0.24)	0.07	(0.25)
Hours (Survey)	40.36	(6.47)	40.43	(5.90)
CBA Covered (Survey)	0.48	(0.50)	0.45	(0.50)
Manufacturing Sector	0.22	(0.41)	0.23	(0.42)
Retail Sector	0.09	(0.29)	0.09	(0.29)
Professional Sector	0.15	(0.36)	0.17	(0.37)
Observations	9756		3575	

Questions About Two Types of Firms

Initial Survey Detail



Selecting Researcher-Provided Firms

1. Not too many firms

▸ Characteristics

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4. Horizontally reasonable
5. Vertically reasonable

Characteristics

Selecting Researcher-Provided Firms

1. Not too many firms
   - 30 well-known German firms: 18 publicly listed, 12 family-owned.
   - Received more than 39.1 million page views on employer rating platform Kununu.
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   - Total employment in Germany $>$ 1.8 million.
3. Known to respondents
   - 23% of respondents have worked at least at one of the firms in the past ten years .
   - 17 of the 30 firms are among the top 100 firms that workers named themselves.
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5. Vertically reasonable

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   - Occupational distributions match
5. Vertically reasonable
   - Median and mean pay throughout observed worker distribution

Characteristics

1. Eliciting Information About Search

Suppose you planned to move to a new company in the next {one/three/six} months. Would you consider applying to any of these? Please select all that apply.

- ❑ Company 1
- ❑ Company 2
- ❑ Company 3
- ❑ Company 4
- ❑ Company 5
- ❑ Company 6
- ❑ Company 7
- ❑ I would not apply to any of these

2. Eliciting Information About Wages

Suppose you planned to move to a new company in the next {one/three/six} months. Would you consider applying to any of these? Please select all that apply.

- ❑ Company 1
- ❑ Company 2
- ❑ Company 3
- ❑ Company 4
- ❑ Company 5
- ❑ Company 6
- ❑ Company 7
- ❑ I would not apply to any of these

What do you think your gross annual pay would be if you worked at these companies in a position similar to your current one?

Company 2: [Fill in gross pay]

Company 4: [Fill in gross pay]

Company 7: [Fill in gross pay]

3. Eliciting Preferences via Hypothetical Choice Experiments

Suppose you planned to move to a new company in the next {one/three/six} months. Would you consider applying to any of these? Please select all that apply.

- ❑ Company 1
- ❑ Company 2
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- ❑ Company 4
- ❑ Company 5
- ❑ Company 6
- ❑ Company 7
- ❑ I would not apply to any of these

What do you think your gross annual pay would be if you worked at these companies in a position similar to your current one?

Company 2: [Fill in gross pay]

Company 4: [Fill in gross pay]

Company 7: [Fill in gross pay]

Suppose you can remain at your current company or switch to any of the companies listed below and immediately receive the raise specified.

Please rank the following job offers from 1 to 4 where 1 is the offer you are most likely to take and 4 is the offer you are least likely to take.

- Company 2 with a X% raise _____
- Company 4 with a Y% raise
- Company 7 with a Z% raise _____
- Remain at current firm at current pay

Eliciting Worker-Provided Firms

Suppose you planned to move to a new company in the next {one/three/six} months. Would you consider applying to any of these? Please select all that apply.

- ❑ Company 1
- ❑ Company 2
- ❑ Company 3
- ❑ Company 4
- ❑ Company 5
- ❑ Company 6
- ❑ Company 7
- ❑ I would not apply to any of these

"Suppose you planned to move to a new company in the next {one/three/six} months. What are companies that you would consider applying to?

Please list three companies that you would consider applying to and that hire employees in positions like yours (e.g. "PlaceHolder Inc"). These can be companies without current job vacancies."

[Fill in Company 1]

[Fill in Company 2]

[Fill in Company 3]

- ❑ I do not want to answer this question

Worker-Provided Firms

- Worker-provided firms span a broad range of the German labor market
  - Total employment in Germany $>$ 6.2 million.
  - Received more than 190 million page views on employer rating platform Kununu.
- Nearly 3000 distinct firms—of varying sizes—are mentioned
  - Ex: local municipal utility, small manufacturer of agricultural equipment, glass producer

Descriptive Statistics | Comparison with Researcher-Provided

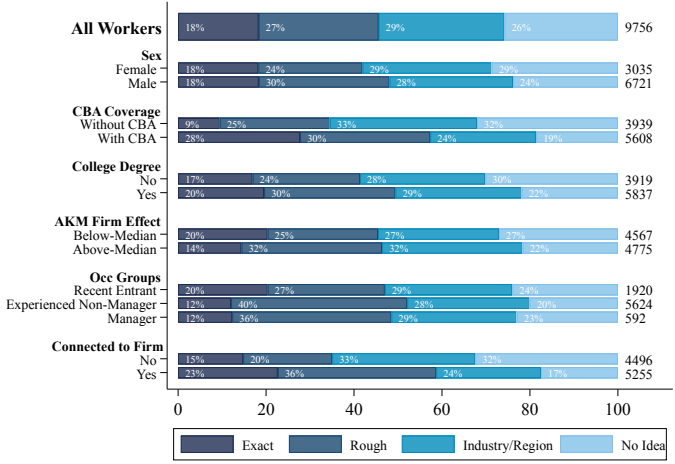
What Do Workers Know About Pay?

Workers' Information About Pay

1. Do workers have any information about pay before they apply?
2. Is this firm-specific information?
3. Do workers agree with each other (are their "firm effects")?
4. Do workers agree with the administrative data?

1. Many Workers Know Wages at the Time of Application

At the time that you applied, did you know what salary you would earn?



2. Workers Believe in a Heterogeneous Uniform Outside Option

What do you think your gross annual salary would be if you worked at these companies in a position similar to your current one?

	Fraction Identical	Std. Deviation	Max/Min	N
	(1)	(2)	(3)	(4)
A. Researcher-Provided Firms				
Initial Survey	0.26	5673	1.18	3715
Follow-Up Survey	0.30	5294	1.15	3163
B. Worker-Provided Firms				
All Workers	0.25	5863	1.19	4433
All in Same State	0.22	4869	1.18	509
All in Same District	0.26	4701	1.19	173
All in Same Municipality	0.22	5084	1.21	159

Note: We asked 50% of workers to provide expected wages at specific researcher-provided firms. Column 1 reports the share of respondents who indicated the exact same expected pay across all three firms. Columns 2 and 3 report averages across respondents.

▸ Firm Fixed Effects are Non-Zero

3. Workers Perceive There to Be A Firm Component to Pay

What do you think your gross annual salary would be if you worked at these companies in a position similar to your current one?

$$\log \tilde{w}_{ij} = \alpha_i + \psi_j + \epsilon_{it}. \tag{1}$$

- Summarize workers' expectations at (randomly-chosen) researcher provided firms Balance
- Expected wage premia ψ_j
  - Identified using within-worker variation in expected salaries
  - Relative to a "base firm" whose premium is normalized to 0
- Worker fixed effects α_i
  - Portion of a worker's salary that they expect to be firm-invariant (across the provided firms)

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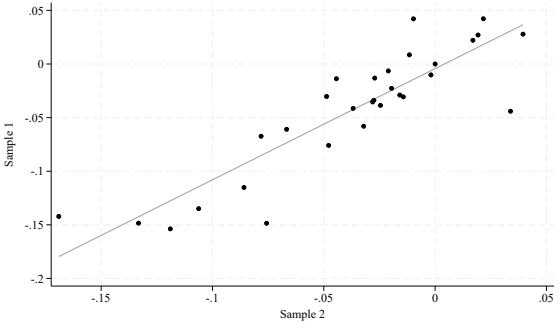
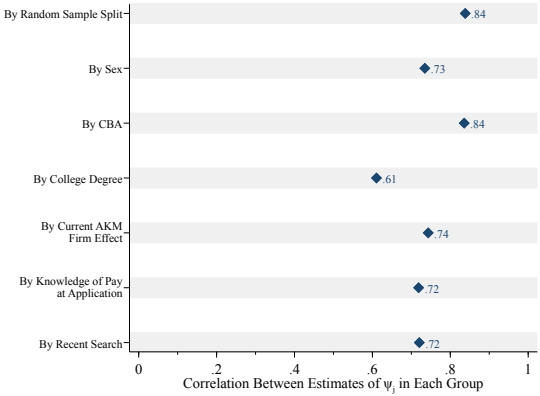
Split-Sample Estimates

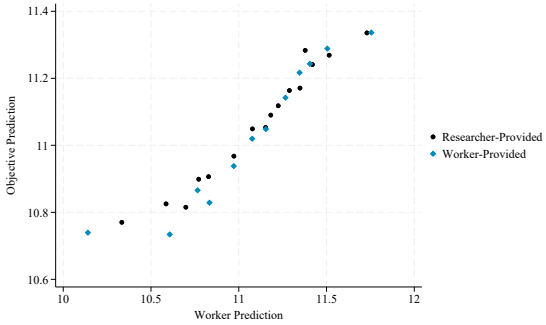


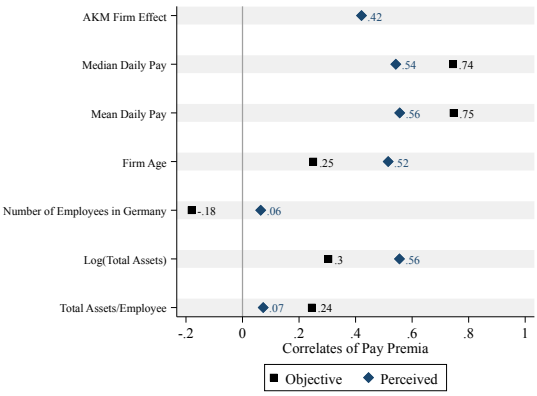
Between-Group Correlation in ψ_j



▸ Comparison with AKM Estimates ▸ Tests of Equality

4. Predictions are Correlated with Administrative Data Predictions





▸ Perceived Outside Options by Current Firm ▸ Quality of Online Salary Data

Pay Expectations and Consideration

Linking Search to Pay: Within-Worker, Within-Firm Design

$$\text{Consider}_{ij} = \beta \log \tilde{w}_{ij} + X_{ij} + \gamma_j + \lambda_i + \gamma_{t(i)} + \epsilon_{ij}$$

				Risk Tolerance		Would be Reluctant to Apply if P(Success) Were Low	
	All Workers			Low	High	No	Yes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Own Pay Expectation	0.341***	0.313***	0.309***	0.256***	0.441***	0.297***	0.240***
	(0.050)	(0.050)	(0.050)	(0.056)	(0.103)	(0.084)	(0.087)
Distance Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Same-Sector Control	No	No	Yes	Yes	Yes	Yes	Yes
Observations	21272	21272	21272	14967	6305	5392	6507
Number of Workers (Clusters)	6440	6440	6440	4519	1921	1476	1781
Test of equality (p-value)	---	---	---	.116		.64	

Note: Regressions use data from researcher-provided firm module of initial and follow-up surveys.

Several Designs

Design 1: Link Consideration of Researcher-Provided Firms to:

1. Pay premia workers associate with that firm
2. Observed pay premia
3. Pay policy (Log of mean pay)

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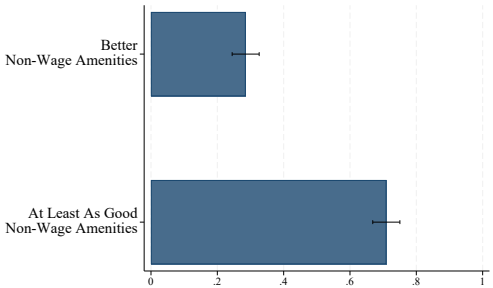
- **Design 2: Link Workers' Free-Text Responses to Pay Premia**

Do Workers Believe $\text{cov}(\psi_j, a_j) < 0$?

Compared to a firm that pays 10% above-market wages, one that pays 30% above-market has:



▸ Question ▸ Heterogeneity in Beliefs ▸ Heterogeneity in Beliefs (Figure)

Do Workers Believe in Queuing?

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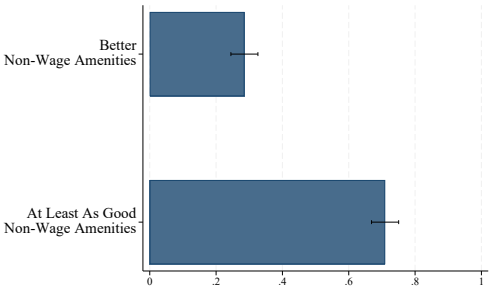
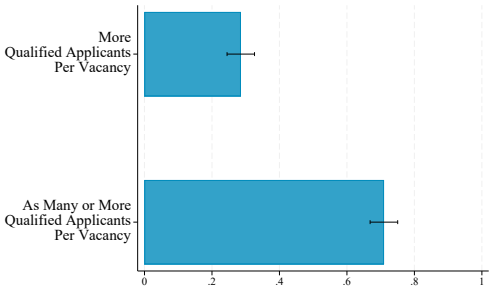


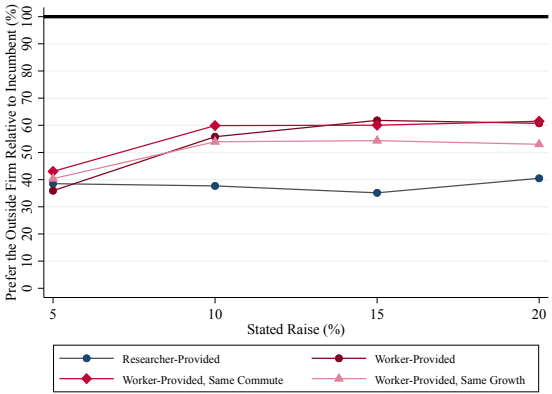


▸ Question

Information and Mobility

But: Not All Workers Want to Switch Firms

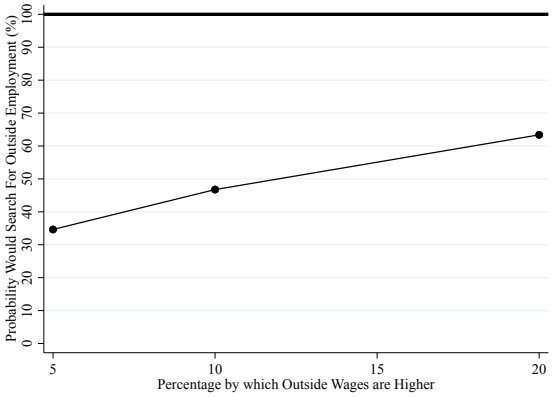
We asked workers to rank three outside firms with randomized raises and their inside firms with no raise.



▸ Raises Balance

But: Not All Workers Want to Switch Firms

Imagine you were to discover that other companies in your area pay {X%} more than your current employer. How likely is it that you would start applying for jobs at other companies?



▸ Reynolds Quote ▸ Reasons Not to Move

Implied Switching Costs

$$u_{ij} = \beta \log w_{ij} + c \cdot 1\{\mathrm{j}(i) \neq j\} + \epsilon_{ij} \tag{2}$$

Main Estimates

	Move to a Researcher-Provided Firm		Move to a Worker-Provided Firm		
	Baseline	Distance Controls	Baseline	Same Commute	Same Growth
	(1)	(2)	(3)	(4)	(5)
Log Raise	6.172***	6.251***	8.112***	12.323***	10.207***
	(0.492)	(0.495)	(0.824)	(1.283)	(1.207)
Incumbent	1.132***	0.703***	0.596***	0.771***	0.774***
	(0.074)	(0.129)	(0.106)	(0.134)	(0.135)
Observations	29961	29961	17539	8821	8782
Number of Workers	7735	7735	4796	2400	2385
Implied Switching Cost	0.183***	0.112***	0.074***	0.063***	0.076***
	(0.009)	(0.019)	(0.008)	(0.007)	(0.008)

▸ What Could Information Do? ▸ Alternative Specifications

Implied Switching Costs

$$u_{ij} = \beta \log w_{ij} + c \cdot 1\{\mathrm{j}(i) \neq j\} + \epsilon_{ij} \tag{3}$$

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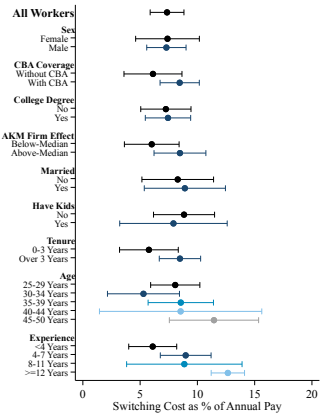


▸ What Could Information Do? ▸ Alternative Specifications

Firm-Specific Valuations of Amenities

$$u_{ij} = \beta \log w_{ij} + a_j + (\phi) \cdot 1\{\mathrm{j}(i) \neq j\} + \mu \log d_{ij} + \epsilon_{ij}$$

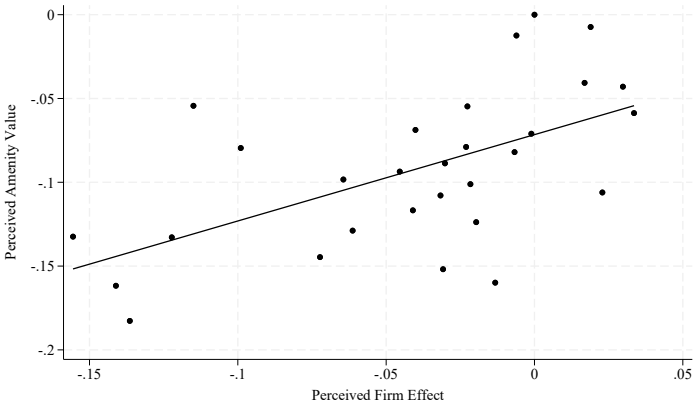
Use workers' preferences over provided firms with randomized raises to identify β and a_j

1. Workers believe firms vary in ex ante rents ($a_j \neq 0$)
2. Workers who would consider applying to the firm have different (and higher) valuations
3. Insiders value firms more highly than outsiders, including those who would consider applying to the firm

Firm-Specific Valuations of Amenities

	Outside Firms Only		All Firms		Consider or Incumbent Only
	(1)	(2)	(3)	(4)	(5)
Log Raise (β)	9.723***				
	(3.131)				
Observations	4217				
Number of Workers (Clusters)	1177				
Test: Ex Ante Firm Effects are Zero					
p-value	<.001				
Chi-Squared Statistic	207.258				
Degrees of Freedom	29				
Test: Ex Ante Effects For Those Who Would and Would Not Apply Are Equal					
p-value					
Chi-Squared Statistic					
Degrees of Freedom					
Test: Ex Post Effects = Ex Ante Effects					
p-value					
Chi-Squared Statistic					
Degrees of Freedom					
Test: Ex Post Effects = Ex Ante Effects For Those Who Would Apply					
p-value					
Chi-Squared Statistic					
Degrees of Freedom					

Firm-Specific Valuations of Amenities



Note: Accounting for the reliability in our estimates, the slope is 0.585 with a standard error of 0.147.

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	(1)	(2)	(3)	(4)	(5)
Log Raise (β)	9.723***	15.561***			
	(3.131)	(3.235)			
Observations	4217	4217			
Number of Workers (Clusters)	1177	1177			
Test: Ex Ante Firm Effects are Zero					
p-value	<.001	<.001			
Chi-Squared Statistic	207.258	187.988			
Degrees of Freedom	29	29			
Test: Ex Ante Effects For Those Who Would and Would Not Apply Are Equal					
p-value		<.001			
Chi-Squared Statistic		164.417			
Degrees of Freedom		30			
Test: Ex Post Effects = Ex Ante Effects					
p-value					
Chi-Squared Statistic					
Degrees of Freedom					
Test: Ex Post Effects = Ex Ante Effects For Those Who Would Apply					
p-value					
Chi-Squared Statistic					
Degrees of Freedom					

Firm-Specific Valuations of Amenities

	Outside Firms Only		All Firms		Consider or Incumbent Only
	(1)	(2)	(3)	(4)	(5)
Log Raise (β)	9.723***	15.561***	7.008***	9.594***	16.260***
	(3.131)	(3.235)	(2.461)	(2.247)	(4.157)
Observations	4217	4217	5671	5671	3001
Number of Workers (Clusters)	1177	1177	1200	1200	1192
Test: Ex Ante Firm Effects are Zero					
p-value	<.001	<.001	<.001	<.001	<.001
Chi-Squared Statistic	207.258	187.988	188.388	131.007	
Degrees of Freedom	29	29	29	29	
Test: Ex Ante Effects For Those Who Would and Would Not Apply Are Equal					
p-value		<.001		<.001	
Chi-Squared Statistic		164.417		209.519	
Degrees of Freedom		30		30	
Test: Ex Post Effects = Ex Ante Effects					
p-value			<.001	<.001	
Chi-Squared Statistic			594.503	504.314	
Degrees of Freedom			13	13	
Test: Ex Post Effects = Ex Ante Effects For Those Who Would Apply					
p-value				<.001	<.001
Chi-Squared Statistic				14558.7	1793.688
Degrees of Freedom				14	11

Conclusions

- Workers believe firms vary in pay and non-wage values
  - About half say they had firm-specific pay when they joined their firm
  - Expectations are correlated with objective values
  - Amenity valuations are as dispersed as perceived wage premia
- Workers direct their search on the basis of pay (and amenities)
  - Firm insiders value amenities more than outsiders
- Switching costs are large (~7-18% of annual pay)
  - Information alone is unlikely to have a substantial impact on search or mobility
  - Importance of other institutions (e.g. unions) for raising wages at the bottom
- Firms vary in ex post rents

Appendix

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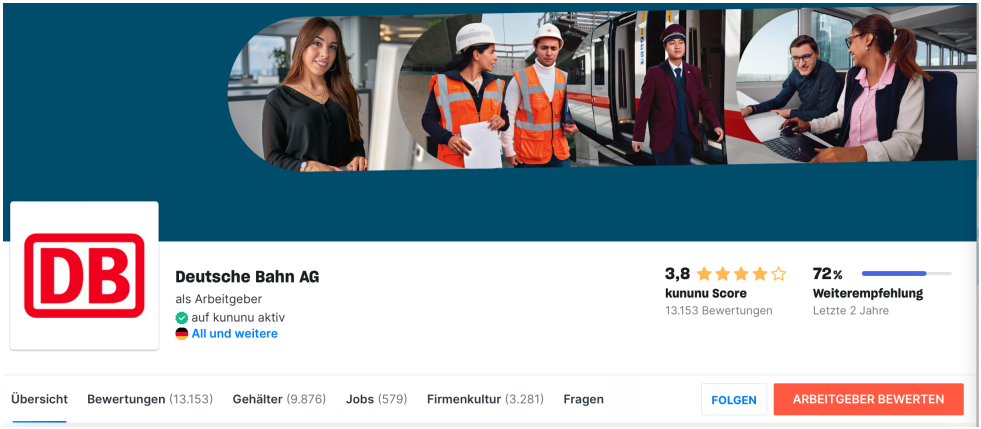
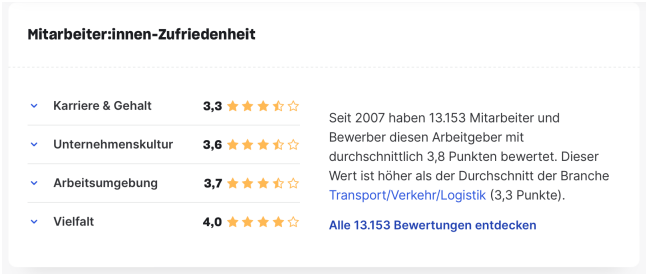
Kununu

Back


Deutsche Bahn AG
als Arbeitgeber
auf kununu aktiv
All und weitere
3,8
kununu Score
13.153 Bewertungen
72%
Weiterempfehlung
Letzte 2 Jahre
Übersicht
Bewertungen (13.153)
Gehälter (9.876)
Jobs (579)
Firmenkultur (3.281)
Fragen
FOLGEN
ARBEITGEBER BEWERTEN

Kununu Back



Mitarbeiter:innen-Zufriedenheit

Karriere & Gehalt	3,3
Unternehmenskultur	3,6
Arbeitsumgebung	3,7
Vielfalt	4,0

Seit 2007 haben 13.153 Mitarbeiter und Bewerber diesen Arbeitgeber mit durchschnittlich 3,8 Punkten bewertet. Dieser Wert ist höher als der Durchschnitt der Branche Transport/Verkehr/Logistik (3,3 Punkte).

Alle 13.153 Bewertungen entdecken

Kununu Back

Kenne deinen Wert und verhandle richtig.

9876 Deutsche Bahn Mitarbeiter haben auf kununu bereits für Gehaltstransparenz gesorgt. Finde heraus, wie viel du bei Deutsche Bahn verdienen kannst.

Suche und wähle Jobtitel

Sortierung: Anzahl Gehaltsangaben

Lokomotivführer:in	Ø **40.800 €** brutto/Jahr 704 Gehaltsangaben
Projektmanager:in	Ø **64.600 €** brutto/Jahr 700 Gehaltsangaben
Fahrdienstleiter:in	Ø **40.900 €** brutto/Jahr 474 Gehaltsangaben

Gehaltszufriedenheit

56% sind mit ihren Gehältern zufrieden (basierend auf 8.575 Bewertungen)

Gehalt & Sozialleistungen **3,5**

Basierend auf 8.575 Bewertungen

Gehaltsinformationen

Aus dem Gehalt wird allzu gern ein Geheimnis gemacht. Gemeinsam mit dir und Millionen anderen kununu Usern können wir für notwendige Gehaltstransparenz sorgen. So findest du den Arbeitgeber, der wirklich zu dir und deinen Vorstellungen passt.

Impact of Randomized Incentives

Back

Initial Survey

	Endorsement Letter	Gift Card Level	Gift Card Binary	Reminder
	(1)	(2)	(3)	(4)
Treatment	0.000	-0.000	-0.002	0.040***
	(0.002)	(0.000)	(0.002)	(0.001)
Observations	109995	109995	109995	99698

Follow-Up Survey

	Provided an E-Mail: No	Provided an E-Mail: Yes		
	(1)	(2)	(3)	(4)
Reminder Letter	0.079***			
	(0.019)			
Initial Letter		0.230***		0.232***
		(0.015)		(0.015)
Reminder E-mail			0.070***	0.077***
			(0.016)	(0.016)
Constant	0.360***	0.270***	0.393***	0.210***
	(0.017)	(0.013)	(0.014)	(0.018)
Observations	3405	5011	5011	5011

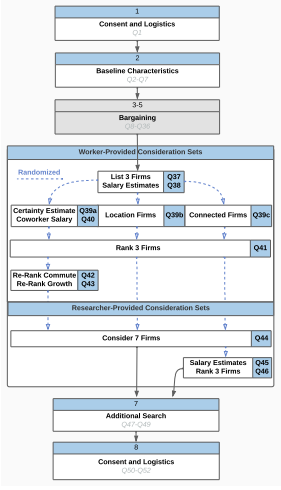
Comparison of Respondents and Non-Respondents

Back

		Linkage Consent			Panel and Linkage			Responded to Follow-Up		
	Invited Mean	Mean	Difference Rel. Invited		Mean	Difference Rel. Linked		Mean	Difference Rel. Invited	
	(1)	(2)	(3)		(4)	(5)		(6)	(7)	
Demographics										
Female	0.30	0.32	0.02	***	0.32	0.01		0.31	-0.01	
	(0.46)	(0.46)	(0.00)		(0.47)	(0.01)		(0.46)	(0.01)	
Age	33.63	33.33	-0.32	***	33.33	-0.02		33.41	0.14	
	(6.59)	(6.23)	(0.06)		(6.14)	(0.17)		(6.16)	(0.14)	
German Citizen	0.81	0.92	0.12	***	0.92	0.03	***	0.94	0.02	***
	(0.39)	(0.27)	(0.00)		(0.26)	(0.01)		(0.24)	(0.01)	
College Education	0.39	0.59	0.22	***	0.60	0.07	***	0.65	0.07	***
	(0.49)	(0.49)	(0.01)		(0.49)	(0.01)		(0.48)	(0.01)	
Apprenticeship	0.45	0.33	-0.12		0.32	-0.05		0.29	-0.06	
	(0.50)	(0.47)	(0.00)		(0.47)	(0.01)		(0.45)	(0.01)	
Daily Earnings	146.03	169.79	25.69	***	170.92	6.61	***	175.02	7.27	***
	(60.77)	(56.71)	(0.59)		(56.67)	(1.50)		(55.27)	(1.24)	
Establishments	42705	3556			2983			1457		
Observations	134995	10134			8416			3664		

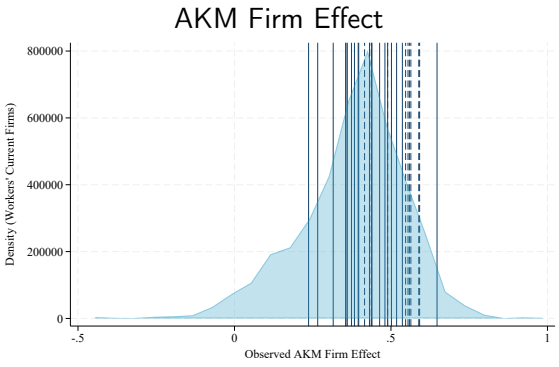
Initial Survey Flow

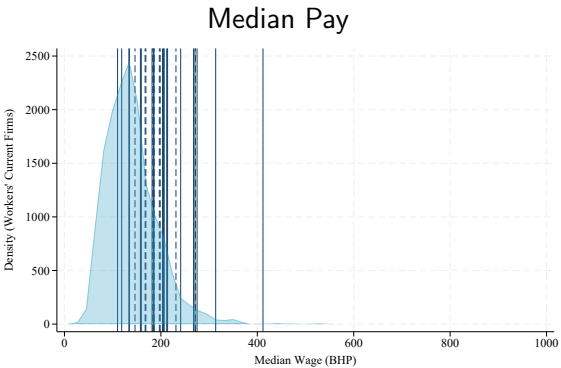
Back



Researcher-Provided Firms vs. Workers' Current Firms

Back





Knowledge of Wages at the Time of Application: Question

Back

At the time that you applied, did you know what salary you would earn?

- I had no or very little idea
- I only had a rough idea what is paid in my region or sector
- I had at least a rough idea what this company pays for the position
- I knew exactly what this company pays for the position

Firm Fixed Effects are Non-Zero Across Specifications

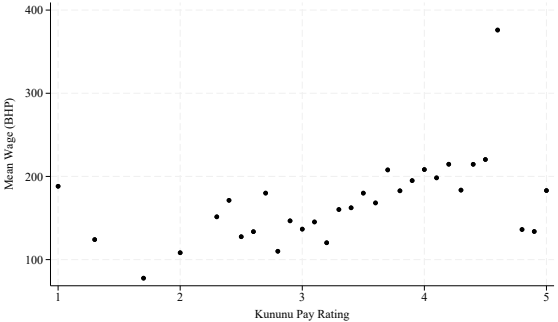
Back

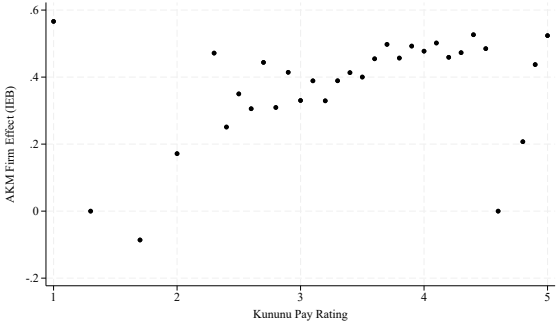
	Sector Fixed Effects		Sector and State Fixed Effects		Sector-State Fixed Effects	
	(1)	(2)	(3)	(4)	(5)	(6)
	A. Researcher-Provided Firms					
Adjusted R-Squared	0.858	0.866	0.862	0.866	---	---
Observations	19734	19734	19734	19734	---	---
All Firm Effects are Zero						
Parameters Tested	24		17		---	---
F-Statistic	7		5			
p-value	<.01		<.01		---	---
	B. Worker-Provided Firms					
Adjusted R-Squared	0.888	0.907	0.868	0.885	0.871	0.881
Observations	10733	10733	8527	8527	8138	8138
All Firm Effects are Zero						
Parameters Tested	537		386		336	
F-Statistic	33792480		6807817		56700000000	
p-value	<.01		<.01		<.01	

Note: In each column, we regress individuals' log expected earnings on the fixed effects indicated in the headers. The regressions in the even columns add firm fixed effects. We control for worker fixed effects, cluster standard errors at the individual level, and use sampling weights. The F-statistic presented below the observation count comes from testing whether all of the firm dummies are zero.

Comparison of Kununu with Administrative Data

Back





Correlates of Perceived AKM Effects

Back

	Researcher-Provided Firms		Worker-Provided Firms	
	Observed Ψ	Estimated Ψ	Observed Ψ	Estimated Ψ
	(1)	(2)	(3)	(4)
Firm Pay				
Log(Mean Daily Pay) (BHP)	0.57	0.61	0.50	0.27
Log(Median Daily Pay) (BHP)	0.56	0.60	0.48	0.26
AKM FE	1.00	0.37	1.00	0.15
Firm Characteristics				
Age	0.31	0.27	0.01	0.01
Log(Overall Employees)	-0.13	0.42	0.53	0.08
Log(Employees in Germany)	0.03	0.31	-0.06	0.09
Log(Total Assets)	0.30	0.53	0.18	0.21
Log(Fixed Assets)	0.30	0.64	0.13	0.21
Employer Ratings (Kununu)				
Number of reviews	-0.06	-0.21	0.05	0.08
Pct. that would recommend	0.09	0.42	0.14	0.11
Salary rating	0.36	0.56	0.28	0.18
Top salary rating	0.09	0.42	0.14	0.11
	30		715	

Comparison with AKM Estimates

Back

		Worker Expectations				
		Informed at Application		Recent Search Activity		
	All Workers	Yes	No	Yes	No	Objective Predictions
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Parameters						
Person Effects	5305	2662	2643	3971	1334	5285
Firm Effects	30	30	30	30	30	29
Summary of Parameter Estimates						
Std. Dev. Person Effects	0.365	0.344	0.386	0.358	0.386	0.516
Std. Dev. Firm Effects	0.051	0.049	0.055	0.051	0.053	0.091
RMSE	0.105	0.102	0.108	0.105	0.106	0.336
Addendum						
Std. Dev. Log(Salary)	0.378	0.357	0.401	0.371	0.401	0.328
Variance Log(Salary)	0.143	0.127	0.160	0.138	0.160	0.108
Observations	19431	9739	9692	14580	4851	18754

Agreement in Estimates Across Demographic Groups

Back

	Baseline Model		Rank-Ordered Logit	
	Correlation	Test of Equality (p-value)	Correlation	Test of Equality (p-value)
	(1)	(2)	(3)	(4)
Split-Sample	0.88	0.57	0.94	0.65
Sex	0.75	0.02	0.87	0.81
CBA	0.84	0.19	0.91	0.84
College Education	0.65	0.12	0.90	0.52
Current Firm AKM Effect (Split at Median)	0.76	0.01	0.90	0.33
Searched in Past 6 Mo.	0.73	0.02	0.86	0.73
Knew Wages at Application	0.73	0.20	0.92	0.56
Easy to Get a Better Job	0.82	0.38	0.93	0.93
Tenure (Split at 2 Years)	0.86	0.47	0.94	0.45

Randomization of Researcher-Provided Firms was Successful

Back

	Initial Survey			Follow-Up		
	Firm Group	Firm	Firm Quality	Firm Group	Firm	Firm Quality
	(1)	(2)	(3)	(4)	(5)	(6)
Demographics						
Female	0.375	0.576	0.570	0.094	0.064	0.570
Age	0.094	0.332	0.817	0.886	0.783	0.817
German Citizen	0.334	0.374	0.195	0.591	0.697	0.195
Education						
College	0.526	0.643	0.947	0.005	0.014	0.947
Apprenticeship	0.496	0.714	0.607	0.069	0.146	0.607
Employment and Earnings						
Daily Earnings	0.227	0.189	0.552	0.941	0.971	0.552
Earnings are Censored	0.391	0.764	0.893	0.682	0.822	0.893
Weekly Hours (Survey)	0.085	0.128	0.106	0.451	0.639	0.106
Covered by a CBA (Survey)	0.351	0.785	0.736	0.882	0.965	0.736
Sector						
Manufacturing	0.998	0.999	0.941	0.481	0.704	0.941
Retail	0.628	0.945	0.297	0.813	0.818	0.297
Professional	0.730	0.980	0.785	0.399	0.360	0.785

Note: We perform separate regressions of each covariate (indicated in the row) on the characteristics indicated in the column. Each entry provides the p-value from an F test that all of the included regressor(s) (other than the constant) are equal to zero. P-values are calculated using standard errors clustered at the worker level.

Randomization of Raises was Successful

Back

	Initial Survey	Follow-Up
	(1)	(1)
Number of Employees	0.39	0.31
Sector		
Manufacturing	0.64	0.64
Retail	0.44	0.09
Professional Services	0.71	0.15
Information Services	0.33	0.92
Transportation	0.21	0.34
Finance	0.74	0.27
Other Firm Characteristics		
HQ in Eastern Germany	0.78	0.59
Year of Incorporation	0.79	0.20
Financial Characteristics		
Total Assets per Employee	0.94	0.36
Fixed Assets per Employee	0.85	0.30
Employer listed as		
Largest employer	0.23	0.07
Most popular employer	0.57	0.90
Important Brand	0.40	0.04

Note: This table assesses the randomization of firms to pay offers. We perform separate regressions of each covariate (indicated in the row) on the randomly assigned pay offer. We control for the position of the firm (i.e., whether listed first, second, or third) and cluster standard errors at the worker level. Column 1 provides the p-value from a test that the coefficient on the (randomly assigned) pay offer is zero.

Number of Distinct Firms Mentioned by Workers

Back

	Firms by Number of Mentions		
	All	Linked to IEB	Linked to Orbis
	(1)	(2)	(3)
1 Time	1979	1302	1926
2-9 Times	719	500	645
10-49 Times	111	89	106
50-99 Times	13	11	13
100-249 Times	12	9	11
250+ Times	8	6	7
Total	2842	1917	2708

Observed Characteristics of Worker-Provided Firms

Back

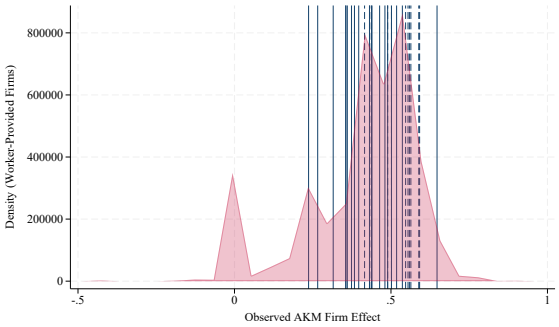
	Mean	Std. Dev	N
	(1)	(2)	(3)
Number of Employees			
1-10	0.04	(0.19)	479
11-50	0.07	(0.25)	479
51-200	0.10	(0.29)	479
201-1000	0.22	(0.41)	479
1001-10000	0.34	(0.47)	479
10001+	0.24	(0.43)	479
Sector			
Manufacturing	0.31	(0.46)	565
Retail	0.12	(0.32)	565
Professional Services	0.13	(0.33)	565
Information Services	0.07	(0.26)	565
Finance	0.07	(0.25)	565

	Mean	Std. Dev	N
	(1)	(2)	(3)
Other Firm Characteristics			
HQ in Eastern Germany	0.07	(0.25)	565
Year of Incorporation	2008	(835)	476
Employer listed as			
Largest employer	0.07	(0.25)	565
Most popular employer	0.07	(0.25)	565
Important brand	0.06	(0.24)	565
Employer ratings			
# page views (in K)	382	(602)	497
# reviews	598	(1090)	497
Top salary rating	0.18	(0.39)	565

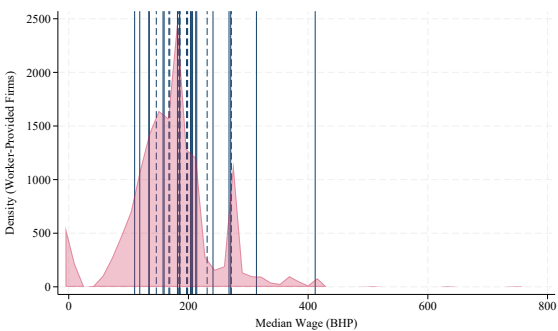
Researcher-Provided Firms vs. Worker-Provided Firms

Back

AKM Firm Effect



Median Pay



Characteristics of Researcher-Provided Firms

Back

	Mean	Std. Dev	N
	(1)	(2)	(3)
Number of Employees			
1-10	0.00	(0.00)	30
11-50	0.03	(0.18)	30
51-200	0.00	(0.00)	30
201-1000	0.00	(0.00)	30
1001-10000	0.03	(0.18)	30
10001+	0.93	(0.25)	30
Sector			
Manufacturing	0.57	(0.50)	30
Retail	0.07	(0.25)	30
Professional Services	0.10	(0.31)	30
Information Services	0.10	(0.31)	30
Finance	0.10	(0.31)	30

	Mean	Std. Dev	N
	(1)	(2)	(3)
Other Firm Characteristics			
HQ in Eastern Germany	0.07	(0.25)	30
Year of Incorporation	1936	(49)	30
Employer listed as			
Largest employer	0.63	(0.49)	30
Most popular employer	0.53	(0.51)	30
Important brand	0.50	(0.51)	30
Employer ratings			
# page views (in K)	1305	(1216)	30
# reviews	2339	(2796)	30
Top salary rating	0.40	(0.50)	30

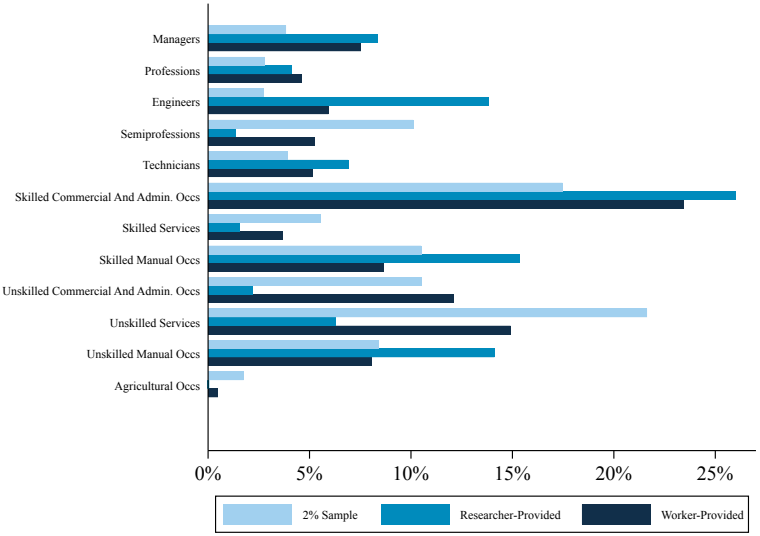
Researcher-Provided vs Worker-Provided Firms

Back

	Researcher-Provided Firms			Worker-Provided Firms		
	Mean	Std. Dev	N	Mean	Std. Dev	N
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Employees						
1-10	0.00	(0.00)	30	0.04	(0.19)	479
11-50	0.03	(0.18)	30	0.07	(0.25)	479
51-200	0.00	(0.00)	30	0.10	(0.29)	479
201-1000	0.00	(0.00)	30	0.22	(0.41)	479
1001-10000	0.03	(0.18)	30	0.34	(0.47)	479
10001+	0.93	(0.25)	30	0.24	(0.43)	479
Sector						
Manufacturing	0.57	(0.50)	30	0.31	(0.46)	565
Retail	0.07	(0.25)	30	0.12	(0.32)	565
Professional Services	0.10	(0.31)	30	0.13	(0.33)	565
Information Services	0.10	(0.31)	30	0.07	(0.26)	565
Finance	0.10	(0.31)	30	0.07	(0.25)	565
Other Firm Characteristics						
HQ in Eastern Germany	0.07	(0.25)	30	0.07	(0.25)	565
Year of Incorporation	1936	(49)	30	2008	(835)	476
Employer listed as						
Largest employer	0.63	(0.49)	30	0.07	(0.25)	565
Most popular employer	0.53	(0.51)	30	0.07	(0.25)	565
Important brand	0.50	(0.51)	30	0.06	(0.24)	565
Employer ratings						
# page views (in K)	1305	(1216)	30	382	(602)	497
# reviews	2339	(2796)	30	598	(1090)	497
Top salary rating	0.40	(0.50)	30	0.18	(0.39)	565
% recommended	74	(13)	30	70	(17)	486

Occupational Distribution

Back



Linking Search to Pay: Researcher-Provided Firms

Back

$$\text{Consider}_{ij} = \beta^{RP} Pay_j + \lambda_i + X_{ij} + \epsilon_{ij}$$

	Stated Consideration			Free-Text Responses		
	(1)	(2)	(3)	(4)	(5)	(6)
Mean of Dependent Variable	0.254			0.017		
	A. Perceived Firm Effect (Split-Sample)					
Firm Premium (Split-Sample)	0.892***	0.983***	0.986***	0.097***	0.099***	0.101***
	(0.142)	(0.166)	(0.171)	(0.015)	(0.016)	(0.016)
Observations	89742	89742	89742	224388	224388	224388
Number of Workers	9756	9756	9756	9756	9756	9756
	B. Observed Firm Effect					
Firm Premium (Observed)	0.174***	0.165***	0.173***	0.014***	0.014***	0.014***
	(0.033)	(0.033)	(0.035)	(0.005)	(0.005)	(0.005)
Observations	89258	89258	89258	214632	214632	214632
Number of Workers	9756	9756	9756	9756	9756	9756
	C. Observed Log(Mean Daily Pay)					
Firm Mean Daily Pay	0.086***	0.093***	0.093***	0.008***	0.008***	0.008***
	(0.011)	(0.011)	(0.011)	(0.002)	(0.002)	(0.002)
Observations	89258	89258	89258	214632	214632	214632
Number of Workers	9756	9756	9756	9756	9756	9756
Firm Characteristics	Size	Size, Brand Recognition	Size, Brand Recognition, CBA	Size	Size, Brand Recognition	Size, Brand Recognition, CBA
Fixed Effects	Worker, Sector	Worker, Sector	Worker, Sector	Worker, Sector	Worker, Sector	Worker, Sector

Note: The outcome variable in Columns 1-3 is an indicator for whether the worker checked the box indicating they would consider applying to the firm if they wanted to switch firms. Regressions use sampling weights. Standard errors are clustered at the worker level.

Linking Search to Pay: Worker-Provided Firms

Back

$$\text{List Firm}_{ij} = \beta^{WP} Pay_j + \lambda_i + X_{ij} + \epsilon_{ij}$$

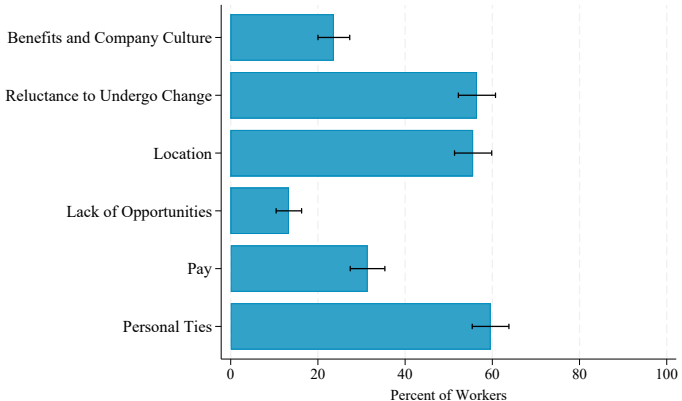
	Stated Consideration			Free-Text Responses		
	(1)	(2)	(3)	(4)	(5)	(6)
Mean of Dependent Variable		0.254			0.017	
	A. Perceived Firm Effect (Split-Sample)					
Firm Premium (Split-Sample)	0.892***	0.983***	0.986***	0.097***	0.099***	0.101***
	(0.142)	(0.166)	(0.171)	(0.015)	(0.016)	(0.016)
Observations	89742	89742	89742	224388	224388	224388
Number of Workers	9756	9756	9756	9756	9756	9756
	B. Observed Firm Effect					
Firm Premium (Observed)	0.174***	0.165***	0.173***	0.014***	0.014***	0.014***
	(0.033)	(0.033)	(0.035)	(0.005)	(0.005)	(0.005)
Observations	89258	89258	89258	214632	214632	214632
Number of Workers	9756	9756	9756	9756	9756	9756
	C. Observed Log(Mean Daily Pay)					
Firm Mean Daily Pay	0.086***	0.093***	0.093***	0.008***	0.008***	0.008***
	(0.011)	(0.011)	(0.011)	(0.002)	(0.002)	(0.002)
Observations	89258	89258	89258	214632	214632	214632
Number of Workers	9756	9756	9756	9756	9756	9756
Firm Characteristics	Size	Size, Brand Recognition	Size, Brand Recognition, CBA	Size	Size, Brand Recognition	Size, Brand Recognition, CBA
Fixed Effects	Worker, Sector	Worker, Sector	Worker, Sector	Worker, Sector	Worker, Sector	Worker, Sector

Note: The outcome variable in Columns 4-6 is an indicator for whether the worker listed each of the firms in the researcher-provided not randomly

Why Don't Workers Want to Move?

Back

We asked workers to select the two main reasons employees are reluctant to switch jobs.

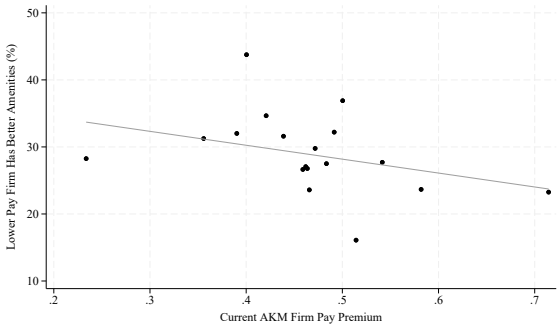


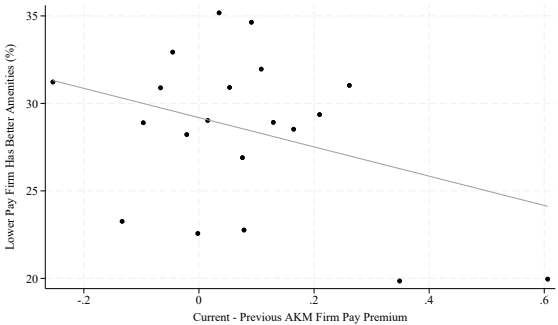
Heterogeneity in the Belief That $\text{cov}(\psi_j, a_j) < 0$

Back

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Firm Pay Premium	-0.385*	-0.388**	-0.418**	-0.515**				
	(0.220)	(0.173)	(0.209)	(0.215)				
Current - Former Firm Pay Premium					-0.153	-0.161*	-0.258**	-0.287***
					(0.101)	(0.097)	(0.120)	(0.111)
Log(Hours)		-0.152	0.093	0.155		-0.258	0.158	0.236
		(0.213)	(0.109)	(0.112)		(0.269)	(0.164)	(0.166)
Log(Wage)		0.015	0.124**	0.167***		0.009	0.074	0.125*
		(0.070)	(0.058)	(0.059)		(0.072)	(0.070)	(0.066)
Female				0.158***				0.150**
				(0.056)				(0.061)
College Degree				-0.083				-0.103
				(0.059)				(0.067)
Experience				0.001				-0.003
				(0.004)				(0.004)
Constant	0.422***	0.904	-0.488	-0.910**	0.264***	1.161	-0.655	-1.165**
	(0.109)	(0.928)	(0.397)	(0.415)	(0.040)	(1.193)	(0.554)	(0.571)
Sector Fixed Effects	---	---	Yes	Yes	---	---	Yes	Yes
Adjusted R-Squared	0.023	0.028	0.283	0.303	0.006	0.023	0.266	0.286
Observations	1642	1642	1642	1642	1384	1384	1384	1384

Heterogeneity in the Belief That $\text{cov}(\psi_j, a_j) < 0$ Back





Robustness to Additional Specifications

Back

	Alternative Specifications of Distance			Alternative Samples		Alternative Weighting Schemes	
	Quadratic in Distance	Direct Distance	Closest Establishment	Initial Survey Only	Follow-Up Only	Unweighted	Population Weights
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Own-Pay Expectation	0.312***	0.309***	0.331***	0.492***	0.522***	0.225***	0.294***
	(0.050)	(0.050)	(0.050)	(0.078)	(0.186)	(0.026)	(0.055)
Observations	21272	21272	21272	15121	5990	21272	21272
Number of Workers (Clusters)	6440	6440	6440	5138	2995	6440	6440

What Workers Believe About High Wage Firms

Back

Suppose you are comparing job opportunities at two different companies: Company 1 pays 10% above the market average and Company 2 pays 30% above the market average.

1. Which company do you think attracts more qualified applicants per opening?
   - Company 1
   - Company 2
   - Both attract the same number of applicants

2. Which company do you think provides better non-wage amenities (e.g., home office, childcare subsidy)?
   - Company 1
   - Company 2
   - Both provide the same non-wage amenities

Reynolds (1951) Back

"These results confirm the prevalent impression that workers are poorly informed about job opportunities. Moreover, it is doubtful how far the situation can be altered by collecting and disseminating additional job information. ***The basic difficulty is that satisfactorily employed workers are almost entirely uninterested in employment conditions in other companies. This lack of interest is an even more serious obstacle than the difficulty of compiling accurate job information*** *[emphasis added]"*

–Reynolds (1951)

What Could Information Do?

Back

	All Workers Are Uninformed	Did Not Know Pay at Application	Difficult to Get a Better Job	Provide Uniform Pay
	(1)	(2)	(3)	(4)
Percent Informed	0	49.826***	44.107***	77.288***
	---	(0.854)	(0.897)	(1.131)
	A. Gap Between Median and Current Firm			
P(Search)	18.557***	5.508***	4.747***	1.741***
	(1.537)	(0.518)	(0.502)	(0.344)
P(Move to a Preferred Firm)	10.408***	2.258***	2.803***	0.739***
	(1.437)	(0.400)	(0.404)	(0.244)
P(Move to a Random Firm)	1.007	0.686***	0.918***	0.409***
	(0.897)	(0.244)	(0.209)	(0.133)
	B. 5% Wage Gain			
P(Search)	10.130***	5.205***	5.445***	2.204***
	(0.644)	(0.350)	(0.375)	(0.273)
P(Move) to a Preferred Firm	7.554***	2.986***	4.158***	1.336***
	(0.885)	(0.439)	(0.523)	(0.307)
P(Move) to a Random Firm	1.491***	0.792***	1.136***	0.643***
	(0.519)	(0.263)	(0.266)	(0.164)

Note: In each column of this table, we estimate the impact of information with a different definition of being uninformed in each column. The sample includes workers who work at firms with below-median pay premia. In Panel A, we estimate the impact if we informed workers of the difference between the median worker's firm premium and their own firm's. In Panel B, we perform an analogous analysis if all workers were told they could receive 5% more at outside firms. Coefficients and standard errors are estimated via bootstrapping.

Alternative Specifications for Switching Costs

Back

	Alternative Specifications of Distance				Alternative Samples		Alternative Weighting	
	Log Distance	Quadratic in Distance	Direct Distance	Closest Establishment	Initial Survey Only	Follow-Up Only	Unweighted	Population Weights
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	A. Researcher-Provided Firms							
Implied Switching Cost	0.112***	0.123***	0.113***	0.167***	0.142***	0.083***	0.127***	0.094***
	(0.019)	(0.011)	(0.019)	(0.011)	(0.025)	(0.023)	(0.007)	(0.022)
Observations	29961	29961	29961	29961	16594	13367	29961	29961
Number of Workers	7735	7735	7735	7735	4322	2351	7735	7735
	B. Worker-Provided Firms							
Implied Switching Cost	0.079***	0.078***	0.066***	0.072***	---	---	0.099***	0.059***
	(0.010)	(0.008)	(0.009)	(0.008)			(0.005)	(0.010)
Observations	15259	15259	17539	17539			15259	15259
Number of Workers	4784	4784	4796	4796			4784	4784