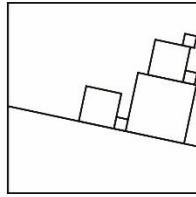
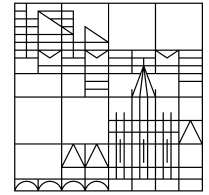


Cluster of Excellence
The Politics of Inequality



Universität
Konstanz



Fair gender wage gaps across Europe?

**Examining the role of occupational
contexts in 26 European countries**

Ole Brüggemann & Thomas Hinz

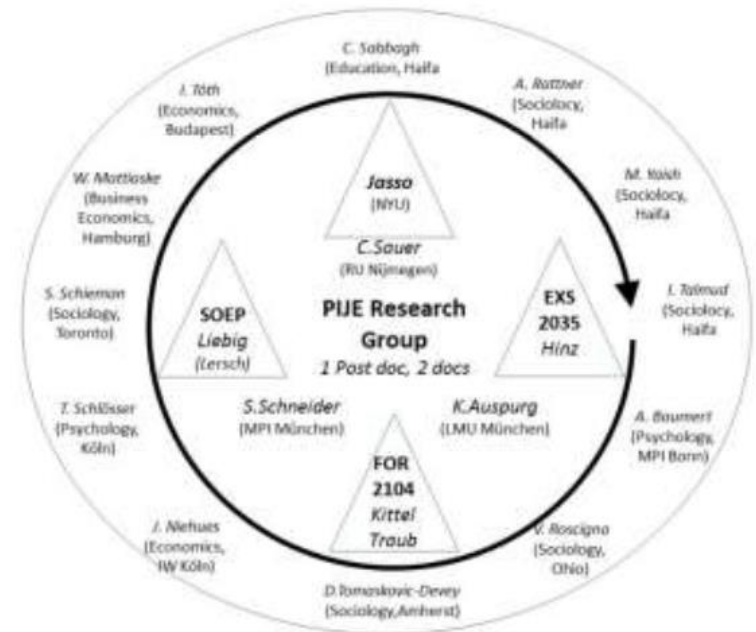
Online Seminar: “Analytical Sociology: Theory and Empirical Applications”

16.11.2020

Perceptions of Inequality and Justice in Europe

PIJE Project (01/2020 - 12/2022)

- Core research group at the DIW SOEP (Berlin)
 - DFG-funded research group “Need-Based Justice and Distribution Procedures” (FOR 2104)
 - Cluster of Excellence “The Politics of Inequality”
- Parts of the group have constructed the ESS, Round 9 questionnaire module: “Justice and Fairness in Europe”
- Participation in WP2: “Procedural and Regional Determinants of Justice Attitudes”



Motivation

Persisting gender wage inequalities across Europe

- Gender Pay Gaps in all European countries
 - High level of variance across countries, 3% - 23% (Eurostat 2018)
 - Stalled gender revolution (England 2010)
- Puzzling question: Why does gender inequality in pay persist?

Previous research on perceptions of fair wages

- Dominant finding: Paradox of the contented female worker
(Valet 2018; Pfeifer and Stephan 2019; Clark 1997; Davison 2014; Mueller and Kim 2008)
- Occupational context matters:
 - First evidence that experienced inequalities within one's own occupation shape perceptions of fair wages (Auspurg et al. 2017)

Research question

Research questions

- Are there gender differences in the fairness perception of own wages across Europe?
- How does the occupational context in which individuals are embedded in affect their perceptions of fairness regarding wages?
 - Are there gender differences?

Contribution

- So far there exists no comparative study of gender differences in fairness perceptions of own wage with harmonized data (Adriaans and Targa (PIJE Group Berlin) are working on it)
- Role of the occupational context for justice perceptions of own pay has been examined predominantly for single-countries

Theoretical framework

How do people make justice evaluations?

- Assumption: Based on some combination of equality-, need-, equity-principle of distributive justice (Deutsch 1985)
- For economic exchange situations (e.g. workforce for wage) the equity-based distribution rule is seen as dominant (Shamon and Dülmer 2014)
- Equity theory (Adams 1965)
 - Perceptions of inequity occur if people perceive their own outcomes as unjustly lower than those observed for a referent person or group
 - Justice evaluation consists of individuals comparing their outcomes (e.g. wages) in relation to their investment (e.g. education, working hours)
 - Decision on referent to compare themselves with (e.g. pay referent) is crucial for the outcome of the justice evaluation

Theoretical framework

Paradox of the contented female worker (Crosby 1982)

- Although, on average, women earn less than men, they are usually more content with their wages
(Valet 2018; Pfeifer and Stephan 2019; Clark 1997; Davison 2014; Mueller and Kim 2008)
 - (Social-)Psychological explanation
 - Men and women generally differ in how they perceive inequality
 - Women consider wages as less important and place more value on other dimensions of work (Phelan 1994)
-
- *H1: Women generally perceive their wages to be more fair than men.*

Theoretical framework

Paradox of the contented female worker (Crosby 1982)

- Structural explanation
 - Perceptions are formed based on underlying comparison processes
 - Others working in the same occupation and of the same gender have been found to be the most important pay referents
(Bygren 2004; Major and Forcey 1985; Schneider and Schupp 2010)
 - Occupational gender segregation structures availability of preferred referents for pay comparisons

→ Women, on average, earn less but compare themselves preferably with other women

-
- *H2: Women working in occupations with a larger share of female employees perceive their wages to be more fair than men.*

Theoretical framework

Role of occupational context

- Reward expectation and status characteristics theory (e.g. Berger and Webster 2006)
 - Gender as diffuse status characteristic carries very general expectation of lower competence of women in most tasks (Correll and Ridgeway 2003)
 - These gender status beliefs are socially shared and should be particularly dominant in social contexts in which gender inequalities already exist (Auspurg et al. 2017)
 - Experiences of inequality within occupation shape fairness perceptions and reproduce existing inequalities
-
- *H3: Women working in occupations with higher gender wage gaps perceive their wages to be more fair than men.*

Data

European Social Survey: Round 9 (2018)

- 26 countries
(without Cyprus due to missing values on working hours)
- Sample of analysis:
 - Currently employed individuals that were asked about their own pay
(24,704 cases excluded)
 - 10 > contracted working hours < 50
(1,654 cases excluded)
 - $p1 > \log. \text{ hourly wage} < p99$
(386 cases excluded)

13,911 observations remaining after listwise deletion

Country	Employee sample	Sample of analysis	Share of valid cases
AT	1,199	677	56.5%
BE	804	673	83.7%
BG	823	495	60.1%
CH	842	579	68.8%
CZ	1,152	683	59.3%
DE	1,204	935	77.7%
EE	980	844	86.1%
ES	748	509	68.0%
FI	770	697	90.5%
FR	890	694	78.0%
GB	965	687	71.2%
HR	725	398	54.9%
HU	833	405	48.6%
IE	903	607	67.2%
IT	939	432	46.0%
LT	777	510	65.6%
LV	417	311	74.6%
ME	454	173	38.1%
NL	818	611	74.7%
NO	833	683	82.0%
PL	655	370	56.5%
PT	432	289	66.9%
RS	629	297	47.2%
SE	747	637	85.3%
SI	596	453	76.0%
SK	431	262	60.8%
Total	20,566	13,911	67.6%

Measurements

Dependent variables

- Actual hourly gross pay (€), log
- Just hourly gross pay (€), log
- Rating scale for fairness of gross pay:
 - -4 (Extremely low unfair)
 - 0 (Fair pay)
 - 4 (Extremely high unfair)

Independent variables

Individual-level

- Age (+ age, squared)
- Education (ISCED, 4 categories)
- Job experience (age-years of education)
- Type of working contract
- Total contracted working hours
- Partner living in household

Firm-level

- Size of firm
- Public/Private firm

Occupation-level

- Gender segregation
- Gender pay gaps

Analysis

Three Steps

1. Descriptive overview
 - Distribution of main variables of interest
2. Comparing Gender Pay Gaps in fair/actual pay across countries
 - Country-specific OLS for log. fair/actual hourly gross pay
3. Linear mixed-effects models for justice evaluation of gross pay for all countries
 - Focus on occupation-level variables for each country

1. Descriptive overview

Country	Fairness evaluation	Female	Actual hourly gross pay	Fair hourly gross pay	N	Fairness evaluation		Actual hourly gross pay		Fair hourly gross pay		N	
						M	F	M	F	M	F	M	F
AT	-0.74	0.52	16.49	17.98	677	-0.62	-0.85	17.48	15.59	18.74	17.27	323	354
BE	-0.47	0.50	20.04	21.13	673	-0.53	-0.42	19.90	20.19	21.03	21.24	336	337
BG	-1.99	0.55	2.59	4.09	495	-1.84	-2.11	2.84	2.38	4.24	3.96	221	274
CH	-0.53	0.43	35.57	37.72	579	-0.39	-0.70	38.90	31.22	40.77	33.79	328	251
CZ	-1.27	0.53	5.95	7.38	683	-1.17	-1.35	6.13	5.78	7.59	7.20	319	364
DE	-0.89	0.47	21.08	23.33	935	-0.74	-1.07	23.14	18.74	25.06	21.35	497	438
EE	-1.22	0.54	7.49	9.69	844	-1.12	-1.30	8.53	6.59	10.88	8.68	389	455
ES	-1.07	0.45	11.20	12.94	509	-1.01	-1.13	11.57	10.76	13.18	12.65	278	231
FI	-0.79	0.53	20.94	22.90	697	-0.43	-1.11	22.91	19.18	24.35	21.59	330	367
FR	-1.08	0.52	15.57	17.74	694	-1.02	-1.13	16.96	14.31	19.25	16.33	330	364
GB	-0.65	0.56	20.97	23.46	687	-0.49	-0.78	23.65	18.82	25.30	21.96	305	382
HR	-1.63	0.55	5.81	7.22	398	-1.30	-1.91	6.46	5.27	7.85	6.70	181	217
HU	-1.87	0.55	4.59	6.56	405	-1.88	-1.87	4.81	4.42	7.02	6.18	182	223
IE	-0.56	0.55	21.33	22.78	607	-0.42	-0.67	20.66	21.88	22.66	22.87	275	332
IT	-1.03	0.47	13.72	14.97	432	-1.10	-0.95	13.62	13.82	15.62	14.22	229	203
LT	-1.98	0.73	5.57	8.00	510	-1.88	-2.02	5.73	5.50	8.57	7.78	138	372
LV	-1.17	0.62	5.18	7.25	311	-1.06	-1.24	5.55	4.96	7.89	6.87	118	193
ME	-2.03	0.60	3.59	5.48	173	-1.88	-2.13	4.06	3.28	6.18	5.01	69	104
NL	-0.35	0.50	22.62	23.27	611	-0.19	-0.51	24.03	21.21	24.29	22.24	305	306
NO	-0.31	0.44	38.19	41.96	683	-0.22	-0.42	38.98	37.18	40.53	43.79	383	300
PL	-1.40	0.51	5.25	6.59	370	-1.18	-1.61	5.35	5.14	6.64	6.55	181	189
PT	-1.52	0.59	8.09	9.90	289	-1.25	-1.71	8.84	7.56	10.54	9.45	119	170
RS	-2.10	0.51	2.66	3.89	297	-1.76	-2.43	2.81	2.50	4.07	3.71	147	150
SE	-0.58	0.49	21.03	22.02	637	-0.38	-0.80	22.22	19.80	23.00	20.98	324	313
SI	-1.49	0.53	8.66	10.72	453	-1.38	-1.60	8.97	8.39	11.16	10.32	212	241
SK	-1.65	0.53	6.48	8.48	262	-1.50	-1.78	7.11	5.93	9.02	7.99	123	139
Total	-1.04	0.52	15.40	17.43	13,911	-0.88	-1.20	17.06	13.88	18.89	16.07	6,642	7,269

2. (Fair) Gender Pay Gaps

Unadjusted GPG

- $\ln(\text{hourly gross pay}_i) = \beta_0 + \beta_1 \text{female}_1 + \varepsilon_i$

Adjusted GPG

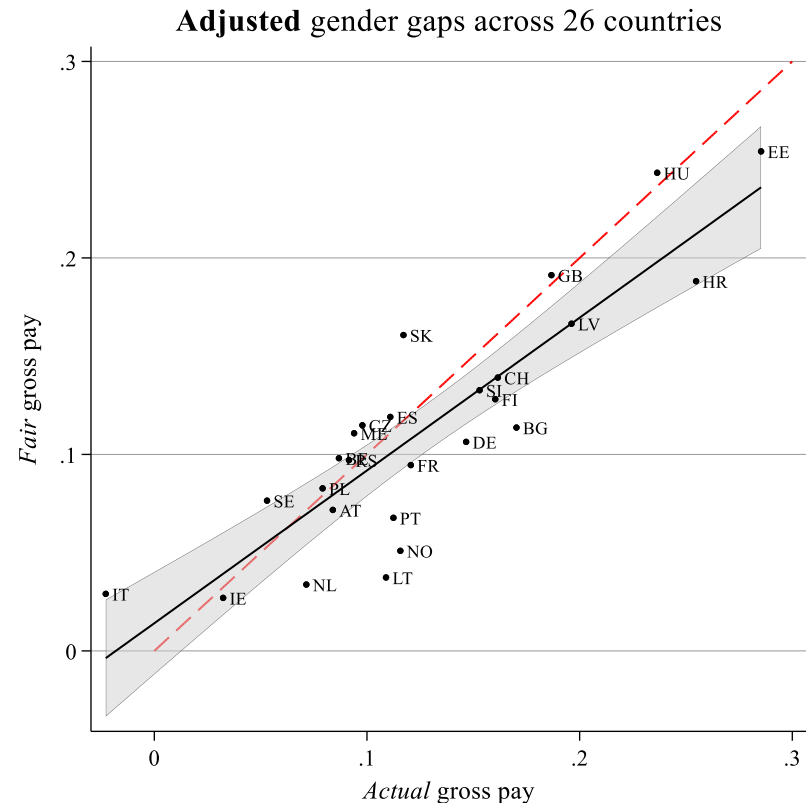
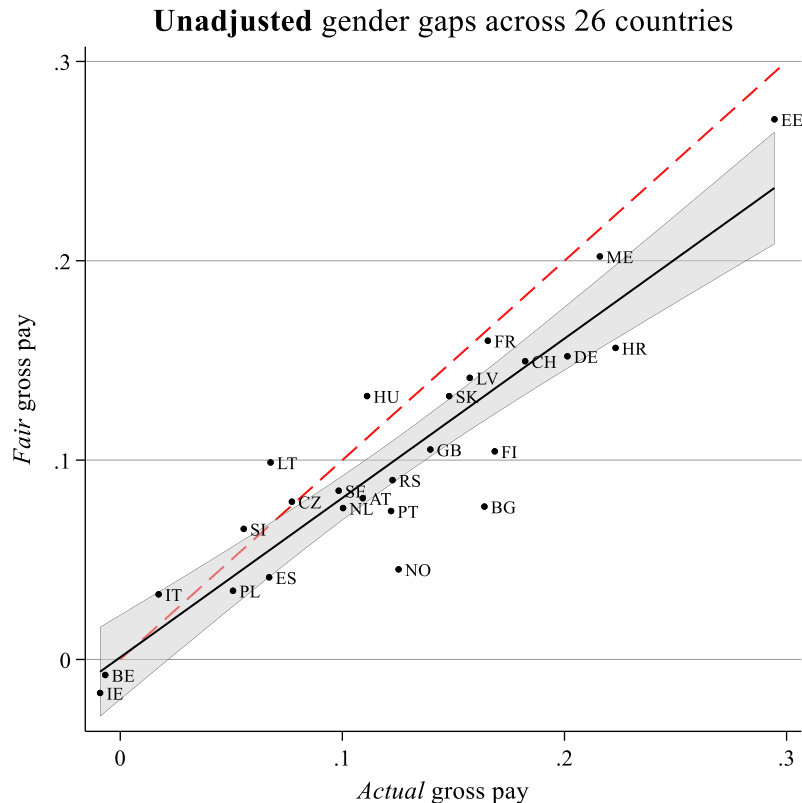
- $\ln(\text{hourly gross pay}_i) = \beta_0 + \beta_1 \text{female}_1 + \beta_i X_i + \varepsilon_i$

Where X_i is a list of controls

- Individual-level: hourly gross pay(only for models of fair pay), age, age², education (ISCED), occupation (ISCO-08), proxy for job experience (= age-years of education), type of employment contract, contracted working hours
- Firm-level: Industry (NACE 2, sections), size of firm, public/private sector

2. (Fair) Gender Pay Gaps

Comparison actual vs. fair gross pay



First impression: Gender inequality in pay is reproduced by perceptions

3. Fairness evaluations

Linear mixed-effects models for fairness evaluation of gross pay

- Sample:
 - Pooled dataset including 21 countries
- Dependent variable:
 - Fairness evaluation (9-point rating scale)
- Method:
 - Linear mixed-effects models
 - Account for nesting of individuals within industries within countries (three-level random intercept models)
 - ICC for countries: 0.150
 - ICC for industries nested in countries: 0.183

3. Fairness evaluations

Focus on occupational structure

- Ideal scenario: Measure occupational context using 2- or 4-digit ISCO
 - No suitable data source available (except of European microdata, e.g. EU-SILC)
- Second choice: Rely on Eurostat data on industries (NACE Rev. 2, 16 sections)
 - Luxembourg Income Study only available for small subset of the ESS countries
 - ESS Round 9 aggregates are unstable, especially when income variables are used

Occupational context	Occupations		Industries
	ISCO, 1-digit	ISCO, 2/4-digit	NACE Rev. 2, sections
Gender segregation (<i>share of women</i>)	ESS9 (26); LIS (12)	<i>No data source with sufficient number of</i>	LIS (12); Eurostat (26)
Gender pay gap (<i>((men-women)/men)</i>)	ESS9 (26); LIS (6)	<i>observations within each occupation available.</i>	LIS (5); Eurostat (21)

Note: Number of available countries in parentheses.

3. Fairness evaluations

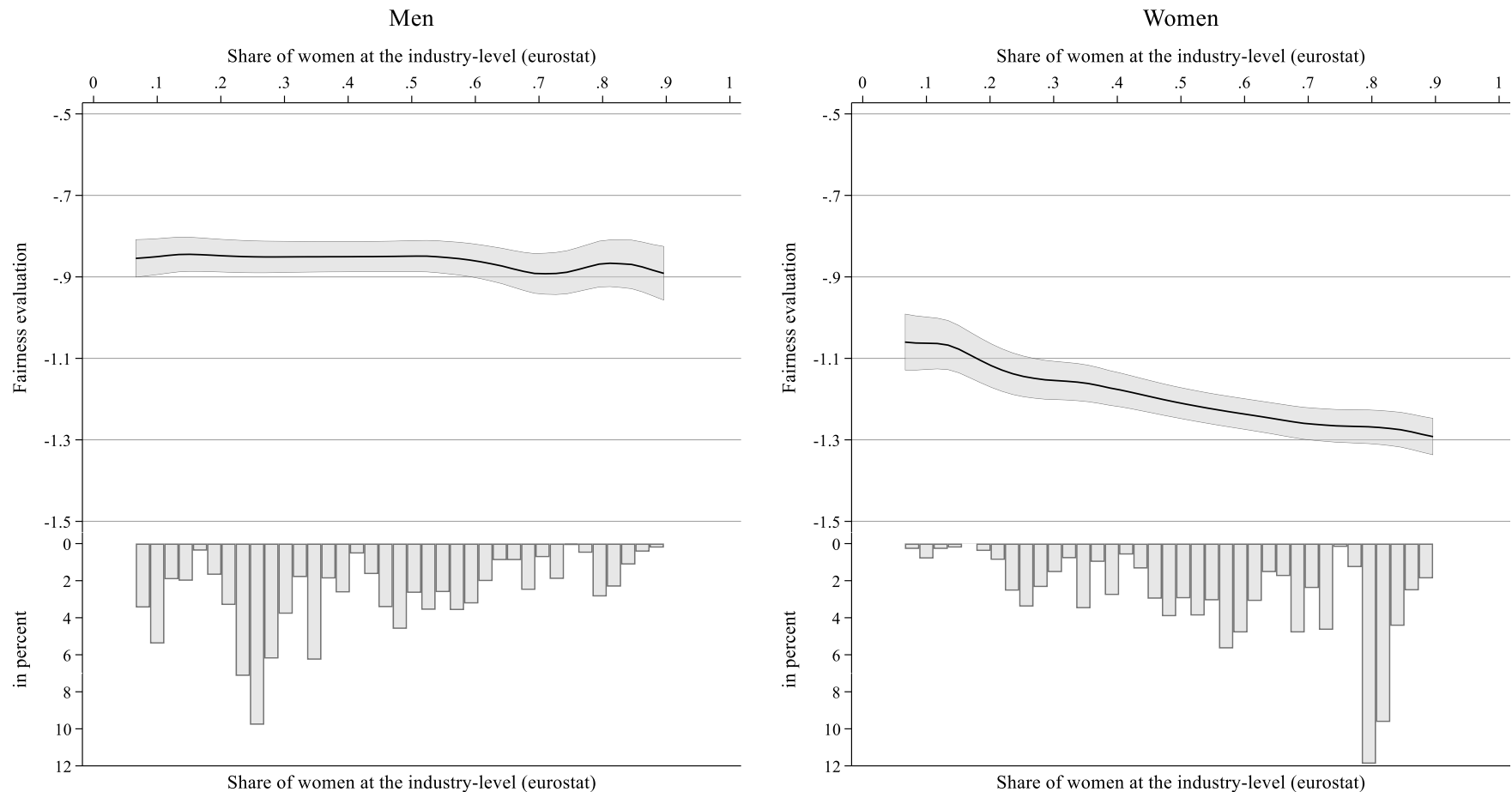
Descriptive statistics of the industry-level variables for the pooled sample

Industry, NACE Rev.2, section-level	Fairness evaluation	Share of women	Gender pay gap
Mining and Quarrying	-0.29	0.17	0.09
Manufacturing	-1.13	0.32	0.19
Electricity, Gas, Steam and Air Condition	-0.79	0.23	0.12
Water Supply; Sewerage, Waste Management	-0.98	0.23	0.05
Construction	-1.08	0.11	0.01
Wholesale and Retail Trade	-1.23	0.54	0.21
Transportation and Storage	-1.00	0.24	0.03
Accommodation and Food Service Activities	-1.30	0.60	0.10
Information and Communication	-0.43	0.31	0.17
Financial and Insurance Activities	-0.56	0.56	0.29
Real Estate Activities	-0.57	0.52	0.15
Professional, Scientific and Technical Activities	-0.74	0.52	0.20
Education	-1.03	0.75	0.12
Human Health and Social Work Activities	-1.20	0.82	0.18
Arts, Entertainment and Recreation	-1.09	0.55	0.15
Other Service Activities	-1.09	0.65	0.18
Total	-1.05	0.50	0.15
N (countries)		21	
N (individuals)		10,629	

- Even on the aggregate over all countries, high level of variance between different industries across Europe

3. Fairness evaluations

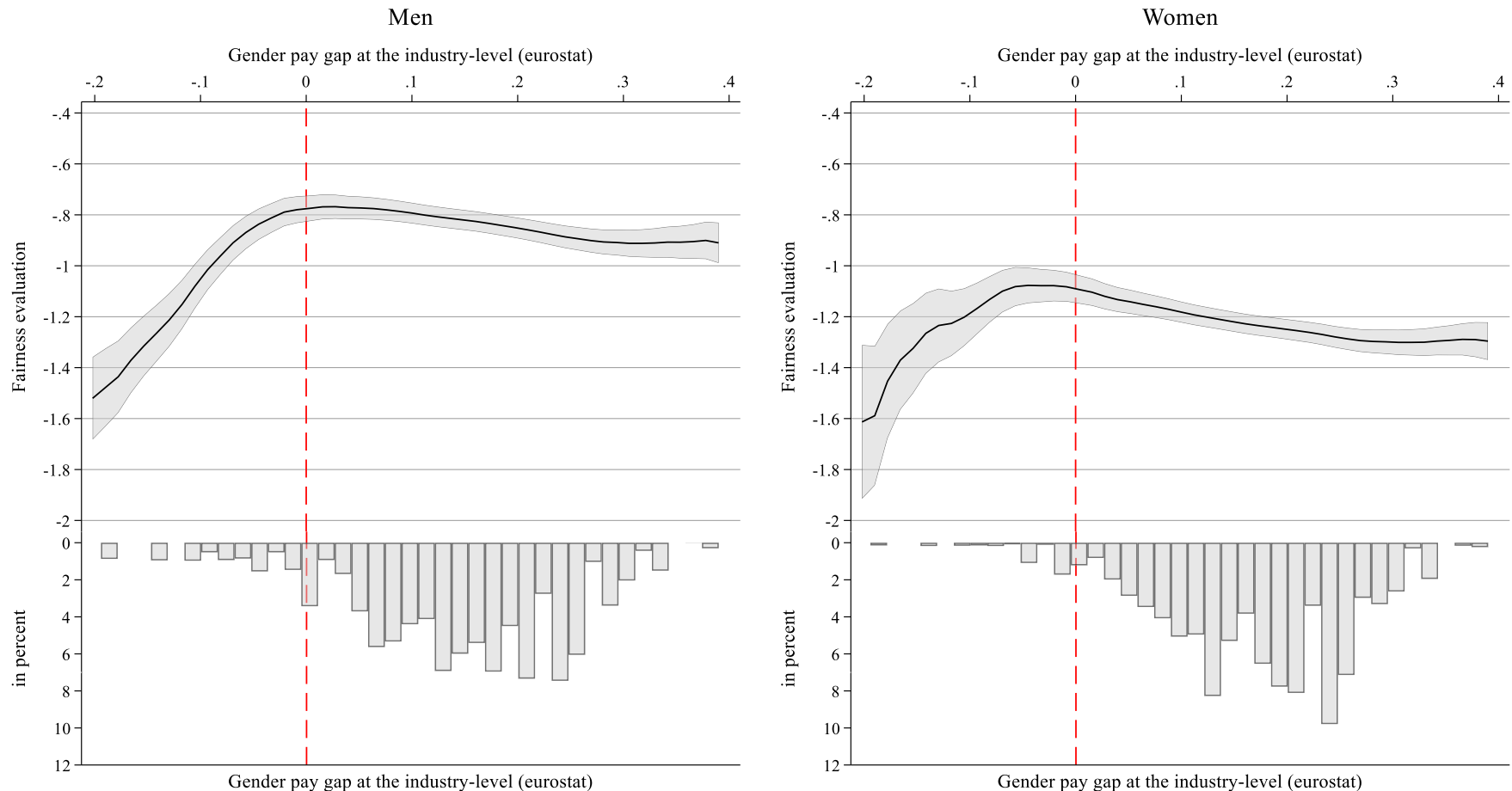
Association of fairness evaluation and industry-level variables by gender



Note: Graphs of bivariate local polynomial smoothing with additional histograms of the underlying distributions (bandwidth = 0.2; N(men) = 5,043; N(women) = 5,586).

3. Fairness evaluations

Association of fairness evaluation and industry-level variables by gender



Note: Graphs of bivariate local polynomial smoothing with additional histograms of the underlying distributions (bandwidth = 0.08; N(men) = 5,043; N(women) = 5,586).

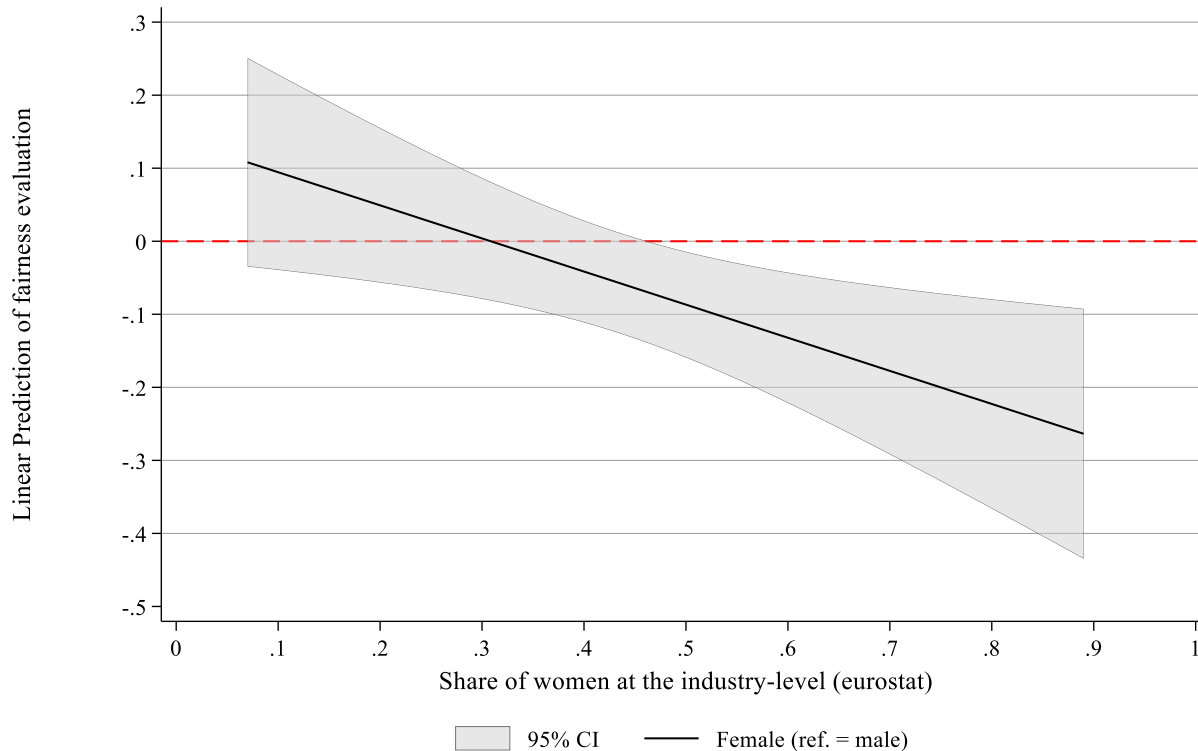
3. Fairness evaluations

Linear mixed-effects models for fairness evaluation of gross pay

Fairness evaluation	M1	M2	M3	M4a	M4b	M5a	M5b	M6	M4 (♂)	M4 (♀)	M5 (♂)	M5 (♀)
Female	-0.271***	-0.055	-0.044	-0.024	0.205*	-0.046	-0.055	0.178	-	-	-	-
Hourly gross pay, quintiles (ref. 3 rd quintile)												
1. Quintile		-0.472***	-0.540***	-0.536***	-0.540***	-0.537***	-0.537***	-0.536***	-0.515***	-0.722***	-0.513***	-0.726***
2. Quintile		-0.269***	-0.281***	-0.283***	-0.283***	-0.281***	-0.281***	-0.282***	-0.267***	-0.356***	-0.266***	-0.357***
4. Quintile		0.248***	0.254***	0.252***	0.253***	0.253***	0.253***	0.252***	0.263***	0.266***	0.263***	0.271***
5. Quintile		0.691***	0.698***	0.697***	0.695***	0.698***	0.698***	0.695***	0.698***	0.618***	0.698***	0.624***
Industry: Share of women				-0.235*	-0.026			-0.071	-0.044	-0.445***		
Female#Ind: Share of women					-0.459**			-0.453**	-	-	-	-
Industry: Gender pay gap <0						1.484**	1.621**	1.750**			1.937***	0.277
Industry: Gender pay gap >0						-0.283+	-0.299	-0.205			-0.314	-0.258
Female#Ind: Gender pay gap <0							-0.790	0.198	-	-	-	-
Female#Ind: Gender pay gap >0							0.044	0.150	-	-	-	-
Controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AIC	36468	35317	35107	35099	35084	35102	35102	35078	17441	17646	17436	17659
BIC	36504	35411	35253	35244	35229	35248	35248	35223	17572	17786	17567	17791
N (individuals)	10629	10629	10629	10629	10629	10629	10629	10629	5043	5586	5043	5586
N (occupations)	314	314	314	314	314	314	314	314	305	293	305	293
N (countries)	21	21	21	21	21	21	21	21	21	21	21	21

3. Fairness evaluations

Cross-level interaction: Gender # Share of females at occupation

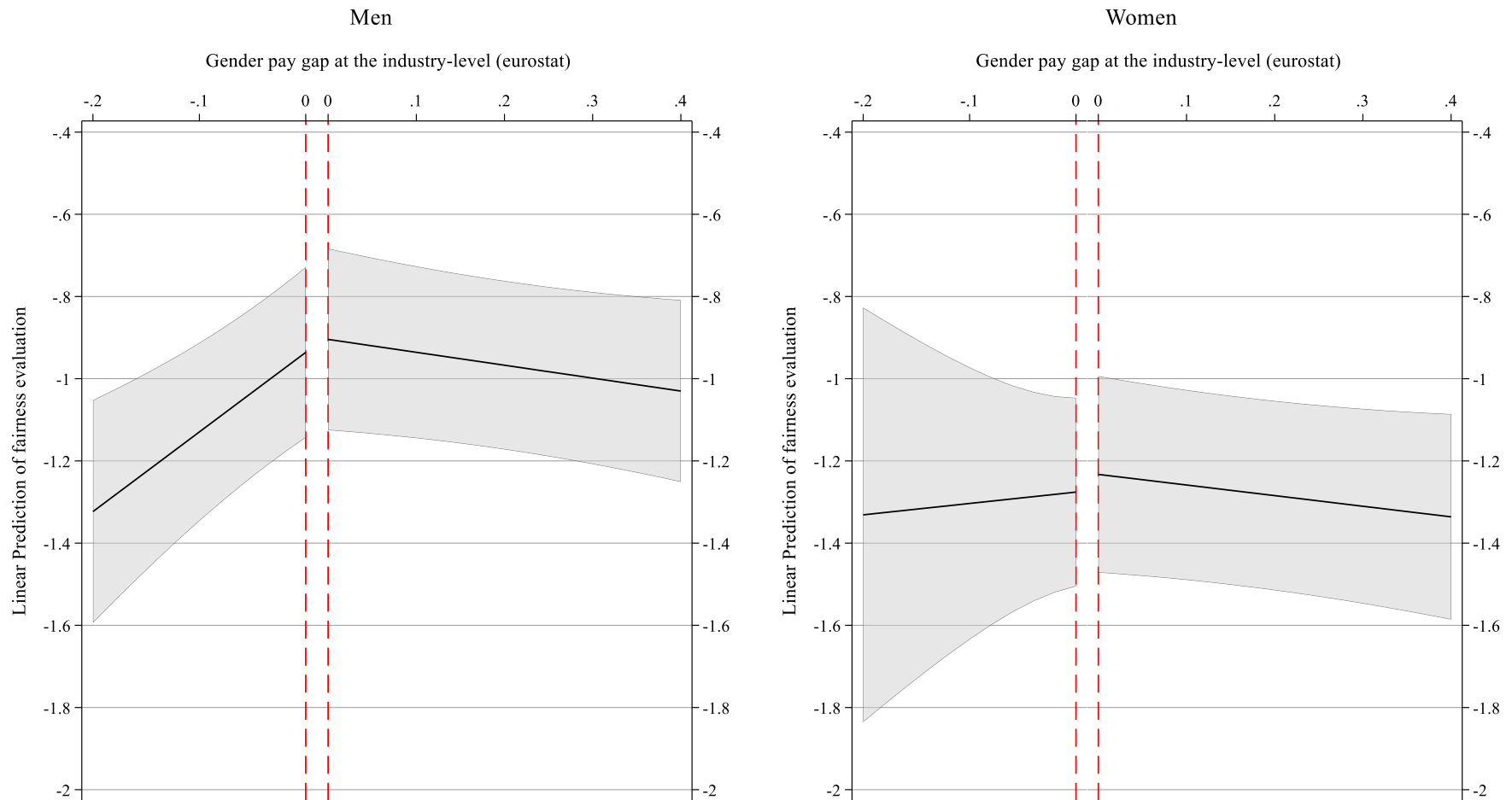


Note: Graph is based on full model (m6). N = 10,629

- Women evaluate their pay as more unfair with higher levels of share of women
 - Significant gender differences only for occupations with share of women of 45-90%

3. Fairness evaluations

Cross-level interaction: Gender # Gender pay gap



Note: Graphs are based on gender-specific models (m5 (men), N = 5,043; m5 (women), N = 5,586)

Conclusion

- Working with the ESS Round 9 we found gender pay gaps within all countries varying from around 0% in Belgium and Ireland up to 29% in Estonia
- Gender pay gaps seem to be reproduced when asking respondents to state a wage that they perceive as just for themselves
 - Overall pattern does not change much when controls are included

Hypotheses		Test
H1	Women generally perceive their wages to be more fair than men.	x
H2	Women working in occupations with a larger share of female employees perceive their wages to be more fair than men.	x
H3	Women working in occupations with higher gender wage gaps perceive their wages to be more fair than men.	x

- Relevant control variables for fairness evaluation:
 - Gross pay, age, education, contracted working hours

Appendix

- Descriptive statistics including control variables
- Results of several robustness checks
- Country-specific effects of gender on fairness evaluation (rating scale)

Sample description

	N	mean	sd	min	max
Dependent variable					
Fairness evaluation (rating scale)	13,911	-1.04	1.38	-4	4
Explanatory variables					
Female	13,911	0.52	0.50	0	1
Hourly gross income, natural log	13,911	2.39	0.84	0.031	5.98
Occupation-level variables					
Share of women	13,911	0.52	0.20	0.031	0.91
Gender Pay Gap	13,911	0.13	0.19	-0.67	0.65
Control variables					
Age	13,911	43.5	12.2	18	90
Education					
Lower secondary or less	13,911	0.11	0.31	0	1
Upper secondary	13,911	0.40	0.49	0	1
Advanced vocational	13,911	0.16	0.36	0	1
Tertiary	13,911	0.34	0.47	0	1
Job experience (age-years of education)	13,911	29.3	13.1	0	79
Type of working contract					
Unlimited	13,911	0.85	0.35	0	1
Limited	13,911	0.13	0.33	0	1
No contract	13,911	0.018	0.13	0	1
Contracted working hours	13,911	37.1	6.60	10	50
Firm size					
Below 10	13,911	0.20	0.40	0	1
10 to 24	13,911	0.20	0.40	0	1
25 to 99	13,911	0.28	0.45	0	1
100 to 499	13,911	0.18	0.39	0	1
500 or more	13,911	0.14	0.34	0	1
Private firm/organization	13,911	0.64	0.48	0	1
Partner living in household	13,911	0.66	0.47	0	1

Robustness Checks

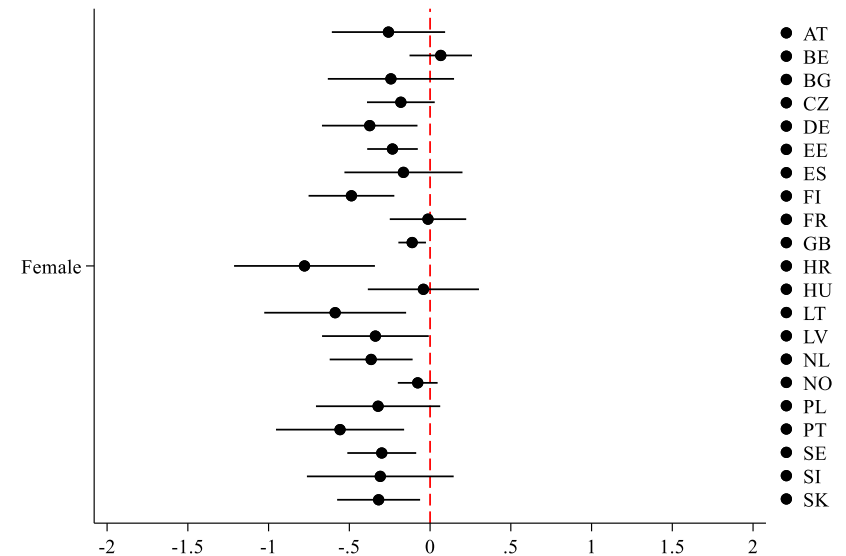
Results remain stable, when:

- Fairness evaluation is modeled as binary outcome (unfair, fair)
- Jasso-function is used instead of rating scale of fairness evaluation
- GDP per capita (€) at the country-level is included
- Luxembourg Income Study is used as contextual data source
- Industries with less than 100 ESS observations were excluded (e.g. Mining)

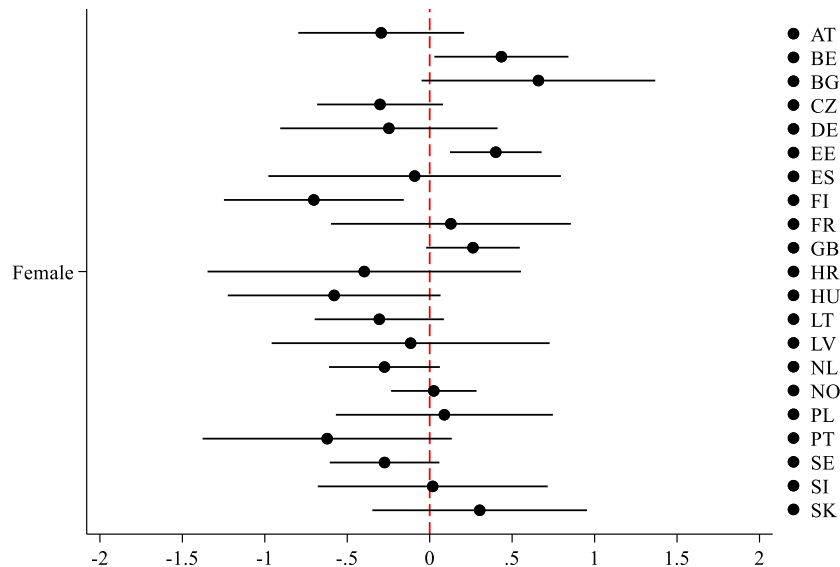
Country-specific gender effects

Fairness evaluation (rating scale)

— Only gender



— Gender and gross pay



— Gender, gross pay and controls

