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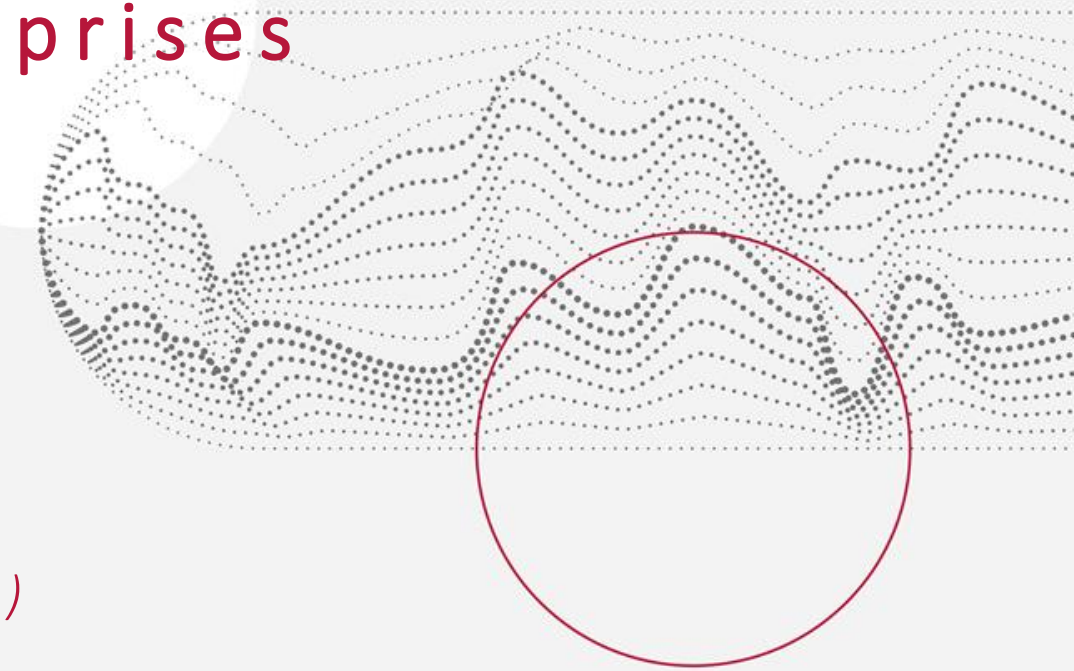
Do female managers help to lower within-firm gender pay gap? Public institutions vs private enterprises



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RESEARCH FOCUS AND RESEARCH QUESTIONS

The goal of the paper:

- to examine the link between the share of women in the workforce and at the top level management and the gender wage inequality

The main research questions:

- How do workers' sex composition and women in managerial positions affect within-firm gender wage inequality?
- Does the role of women and female managers differ for the private firms and the public institutions?

RESEARCH RELEVANCE AND MOTIVATION

- The issue of the gender wage gap continues to attract attention, both by researchers trying to fully understand its roots and development, and by policymakers.

- Policy options to decrease women's disadvantage in pay include regulations aimed at increasing the share of female managers, and especially female board members.

- The existing evidence on the link between female managers and the gender pay gap is, however, still scarce. It also usually refers to private sector firms in Western Europe or the US (e.g. Bayard et al. (2003) for the US, Bertrand et al. (2014) for Norway, Flabbi et al. (2014) for Italy, Gagliarducci and Paserman (2014) for Germany)

RESEARCH CONTRIBUTION

We contribute to the existing literature in three main aspects:

- We analyze **firm level gender** wage inequality linking it to workers' sex composition and female managers
- We distinguish between **private and public** institutions
- We analyze these issues for **Poland,** which is interesting from at least three reasons:
  - It experiences a large discrepancy between the raw gender pay gap (around 6-9%) and the adjusted pay gap (around 20%)
  - The share of public sector employment is still large (app. 30%)
  - It displays a negative public sector wage premium, which is greater for women than for men.

DATASET AND VARIABLES

DATASET

2012 Structure of Wages and Salaries Survey – a large **matched employer-employee** database collected by the Polish Central Statistical Office.

- We limit the sample to firms with at least 100 employees
- The sample covers 194,397 (43%) individuals working in 1,652 public sector institutions and 255,839 (57%) individuals employed in 2,256 private companies

KEY VARIABLES

- Hourly wage – defined as the sum of monthly salary, 1/12 of yearly honorarium and extra remuneration paid for the public sector divided by the number of usual hours of work (per month) plus monthly salary received from overtime divided by monthly number of hours worked as overtime.
- Share of female managers – % of females among individuals working in occupations with ISCO code 1 (‘Managers’)

METHODOLOGY

The analysis is divided into two main steps:

- The derivation of firm level gender wage gap (for each firm)
- The analysis of the relation between the unexplained portion of the firm level gender wage gap (‚discriminatory component') and workers' sex composition

This is done by:

- Ñopo non-parametric decomposition method (Ñopo, 2008)
- Regression analysis, in which the dependent variable is the unexplained component of the gender wage gap derived from the first step, and the key independent variables are defined as the share of female workers and the share of female managers.

METHODOLOGY – ÑOPO DECOMPOSITION

- It is a non-parametric method based on matching that assigns each female a male ‚twin' in terms of their observable characteristics
- Once matched, it compares average wages among matched (in the ‚common support') and unmatched (out of the ‚common support') male and female subsamples

- We take an advantage of the linked employer-employee data and apply Ñopo decomposition for each firm (*j*) in our sample:

$$\Delta_j = \Delta O_j + \Delta X_j + \Delta M_j + \Delta F_j$$

Δ_j - the total gap (raw difference)

ΔO_j - **the unexplained (‚discriminatory') component of the gap**

ΔX_j - the explained part of the gap (among matched cases)

ΔM_j - the part explained by the differences in characteristics between matched and unmatched females

ΔF_j - the part explained by the differences in characteristics between matched and unmatched males

RESULTS

Ñopo decomposition of the gender wage gap at individual level (panel A) and within firm (panel B) by sector

Level	Raw Difference (Δ)	Unexplained (adjusted pay gap; ΔO)	Explained (ΔX)
Panel A: GWG individual level			
Overall	-0.2554	-0.2753	0.0199
Private	-0.2805	-0.2694	-0.0109
Public	-0.2589	-0.2147	-0.0443
Panel B: GWG within firm			
Overall	-0.1522	-0.1449	-0.0166
Private	-0.1576	-0.1576	-0.0140
Public	-0.1449	-0.1283	-0.0199

Notes: Individuals are matched based on: Age (5 groups), education (5 groups), occupations (5 groups)

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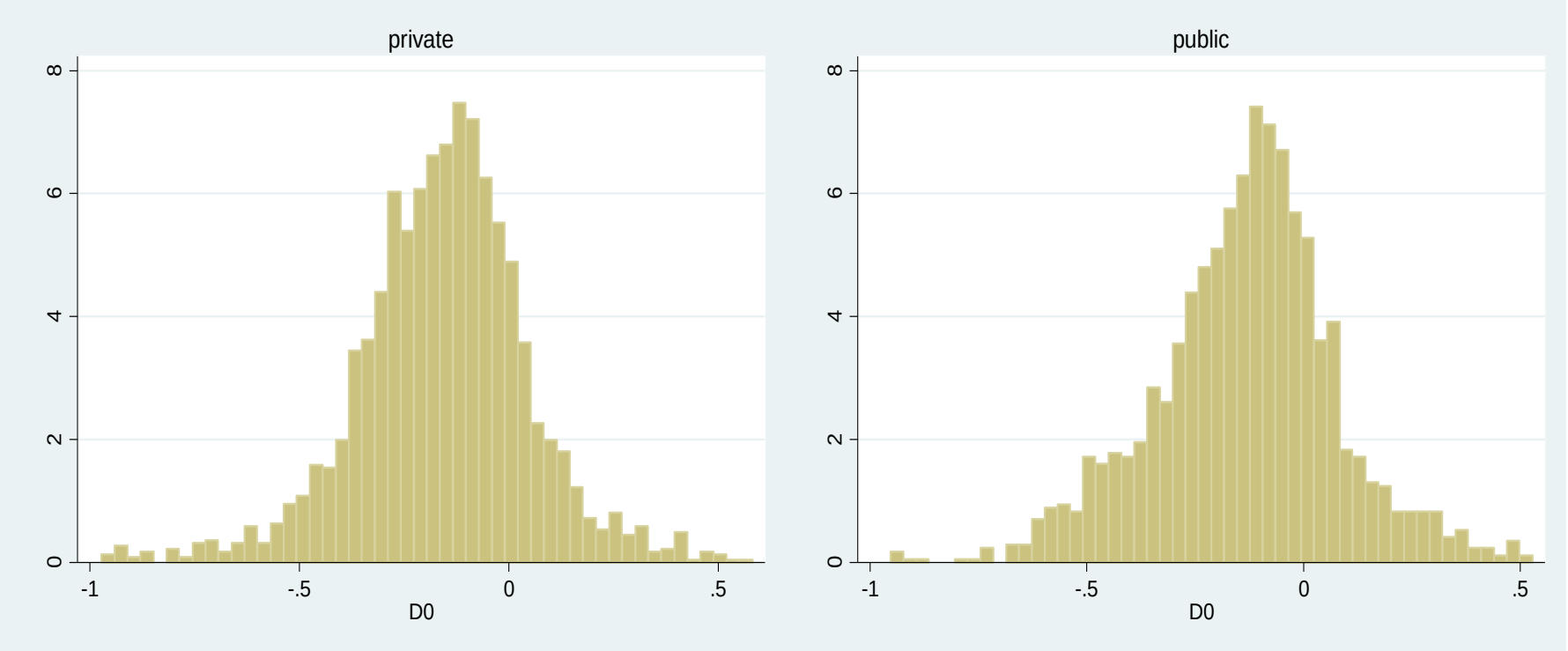
Distribution of firm-specific adjusted wage gap by sector



Smaller GWG in the public sector is partially due to the fact that public units are more likely to reveal positive wage gaps, meaning that women are earning more than ‚similar' men.

RESULTS

Coefficients on the shares of women and female managers obtained from OLS estimation of gender pay gaps at firm level

Firm level share of:	Model 1		Model 2	
	Private	Public	Private	Public
Women	0.128***	-0.061*	0.135***	-0.059
	(0.047)	(0.036)	(0.045)	(0.037)
Female managers	-0.013	0.038*	-0.017	0.039*
	(0.039)	(0.022)	(0.039)	(0.021)
Controls:				
NACE	Yes		Yes	
Regions	Yes		Yes	
Firm size	Yes		Yes	
Co-worker characteristics	No		Yes	

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1;

RESULTS

Coefficients on the shares of women and female managers obtained from OLS estimation of gender pay gaps at firm level

Firm level share of:	Model 1		Model 2	
	Private	Public	Private	Public
Women	**0.130*****	-0.063*	**0.133*****	-0.059
	(0.047)	(0.035)	(0.045)	(0.036)
Female managers	-0.013	0.039*	-0.017	0.039*
	(0.039)	(0.021)	(0.039)	(0.021)
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Higher shares of women are likely to decrease GWG only in the private sector

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Higher shares of female managers are in turn likely to decrease GWG only in the public sector

RESULTS

Coefficients on the shares of women and female managers from quantile regression estimates of gender pay gaps at firm level

Firm level share of:	private sector				
	10th p	25th p	50th p	75th p	90th p
women	0.241***	0.140***	0.096***	0.057**	-0.003
	(0.056)	(0.035)	(0.025)	(0.025)	(0.040)
female managers	-0.075	-0.029	-0.053**	-0.004	0.099**
	(0.053)	(0.026)	(0.021)	(0.018)	(0.043)
Controls:	NACE, firm size, region, co- worker characteristics.				
Firm level share of:	public sector				
	10th p	25th p	50th p	75th p	90th p
women	-0.165***	-0.107**	-0.049	0.008	0.013
	(0.053)	(0.045)	(0.047)	(0.037)	(0.055)
female managers	0.010	-0.001	0.019	0.016	0.099***
	(0.027)	(0.023)	(0.028)	(0.025)	(0.029)
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In the private sector, higher shares of women are likely to **decrease** the GWG at all but the very top of the GWG distribution
→ they decrease the GWG in the firms, which have high and medium GWGs.

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Controls:	NACE, firm size, region, co- workers characteristics.				

In the public sector, higher shares of women are likely to **increase** the GWG at the low end of the GWG distribution
→ they increase further the GWG in the firms, which have high GWGs.

RESULTS

Coefficients on the shares of women and female managers from quantile regression estimates of gender pay gaps at firm level

Firm level share of:	private sector				
	10th p	25th p	50th p	75th p	90th p
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	(0.027)	(0.023)	(0.028)	(0.025)	(0.029)
Controls:	NACE, firm size, region, co- workers characteristics.				

Both in the private and in the public sector, higher shares of female managers are likely to **decrease** the GWG at the very top of the GWG distribution

→ they decrease the GWG only in the firms, in which the GWG is already low (even positive)

RESULTS

Coefficients on the shares of women and female managers obtained from OLS estimation of gender pay gaps at firm level, separately for low, medium and high human capital firms

Firm level share of:	private sector			public sector		
	low skilled	medium skilled	high skilled	low skilled	medium skilled	high skilled
Women	0.148	0.172***	0.106	0.029	0.055	-0.036
	(0.092)	(0.066)	(0.101)	(0.073)	(0.075)	(0.066)
Female managers	-0.016	-0.012	-0.020	0.002	0.005	0.094***
	(0.066)	(0.057)	(0.071)	(0.043)	(0.049)	(0.029)
Controls:	NACE, firm size, region, co- workers characteristics.					

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1;

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Women	0.146	**0.176*** **	0.107	0.031	0.054	-0.033
	(0.092)	(0.066)	(0.105)	(0.073)	(0.074)	(0.066)
Female managers	-0.017	-0.015	-0.023	0.002	0.008	**0.096*** **
	(0.066)	(0.057)	(0.075)	(0.043)	(0.049)	(0.029)
Controls:	NACE, firm size, region, co- workers characteristics.					

In the private sector, higher shares of women are likely to **decrease** the GWG, especially in medium skilled firms

In the public sector, higher shares of female managers are likely to **decrease** the GWG, only in high skilled firms

Robustness checks

- The firm size cut off
- The wage definition
- Matching threshold

The strongest results :

- Higher shares of women related to lower the pay gap in provate sector firms, and increase it in some of the public units, where the gap is high in particular
- Higher shares of female managers associated with lower GPG in high skilled public sector units -> these are mostly public services; with above average share of young female workers, higher share of part time & temporary work

CONCLUSION

- Women in Poland experience on average slightly greater ‚unjustified' wage inequality in the private sector than in the public sector.

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- Once we account for the differences in workers' characteristics, the unexplained gap is reduced in the public sector, but not in the private firms, meaning that they appear to be more discriminatory towards women.

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- Women in Poland experience on average slightly greater ‚unjustified' wage inequality in the private sector than in the public sector.
- Once we account for the differences in workers' characteristics, the unexplained gap is reduced in the public sector, but not in the private firms, meaning that they appear to be more discriminatory towards women.
- The results **do not support the hypothesis** that it is the higher share of females and female managers that drive this divergence in public/private patterns.

CONCLUSION

- On the contrary, the results show that:
  - Firms with higher shares of female workers are likely to have lower adjusted gender wage gap in the **private sector only**
  - It is also found mostly in the companies that require medium skilled workers

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  - Firms with higher shares of female workers are likely to have lower adjusted gender wage gap in the **private sector only**
  - It is also found mostly in the companies that require medium skilled workers
  - In the public sector institutions women's greater relative employment is likely linked to greater pay gaps
  - Both in private and public institutions **female managers are not found** to significantly help to lower adjusted wage gaps within firms on a universal basis
  - But this appears to be valid only in public firms and institutions, in which the gaps are already low or even positive, as well as high-skilled public sector institutions

CONCLUSION

Based on the results, it is thus difficult to claim that female managers are better at lowering the unjustified gender wage differentials.

It may be as well that firms and institutions, which already pay women well, are more likely to attract or maintain female managers in their workforce.

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Thank you!

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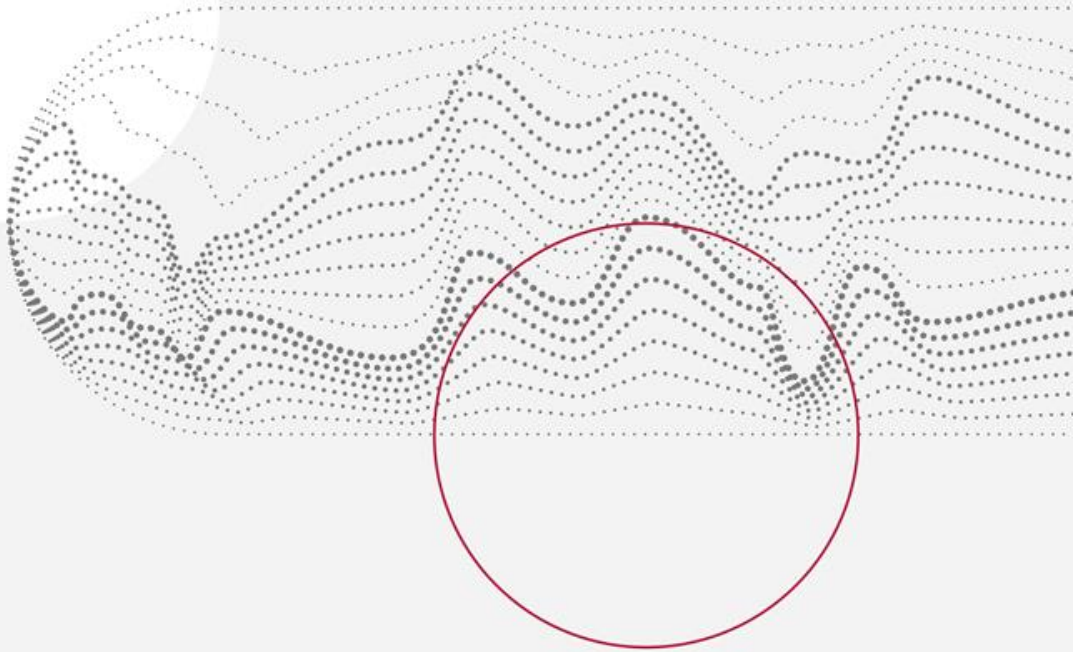

METHODOLOGY – ÑOPO DECOMPOSITION

- While matching we need to choose characteristics based on which individuals are matched
- There is a tread-off between the number of matching variables and the number of matched cases (i.e. ‚the curse of dimensionality'; Ansal, 2015).
- We try 7 specifications and choose to match male and female workers based on:
  - Age (5 groups), education (5 groups), occupations (5 groups)

Combination (dummies for)	Matched men	Matched females	Average wage difference	Average adjusted wage gap
(1) age + education	86%	78%	-15.2%	-17.9%
(2) age+ education+ experience	77%	69%	-15.2%	-18.4%
(3) age + education + experience + tenure	65%	58%	-15.2%	-18.8%
(4) age + education + experience + tenure + occupations	47%	42%	-15.2%	-15.1%
(5) age + education + experience + tenure + occupations +contract type	44%	40%	-15.2%	-15.0%
(6) age + education + experience + tenure + occupations +contract type + part time	43%	38%	-15.2%	-15.1%
(7) age + education + occupations	**67%**	**59%**	-15.2%	-14.5%

RESULTS

Ñopo decomposition of the gender wage gap at individual level (panel A) and within firm (panel B) by sector

Level	Raw Difference (Δ)	Unexplained (adjusted pay gap; ΔO)	Explained (ΔX)	Explained by women in and out of the common support (ΔM)	Explained by men in and out of the common support (ΔF)	% women matched	% men matched
Panel A: GWG individual level							
Overall	-0.2554	-0.2753	0.0199	. 0.0000	0.0000	100%	100%
Private	-0.2805	-0.2694	-0.0109	. 0.0000	-0.0001	100%	100%
Public	-0.2589	-0.2147	-0.0443	0.0000	0.0001	100%	100%
Panel B: GWG within firm							
Overall	-0.1522	-0.1449	-0.0166	-0.0298	0.0379	67%	59%
Private	-0.1576	-0.1576	-0.0140	-0.0184	0.0291	68%	54%
Public	-0.1449	-0.1283	-0.0199	-0.0442	0.0496	66%	65%

ROBUSTNESS ANALYSIS

We run the analysis using **monthly earnings (without yearly bonuses)** instead of **hourly wages**:

- The total gender pay gap is found to be around 19%, which is lower than when hourly wages are used, but similar to the estimates reported in other studies (e.g. Van der Velde, Tyrowicz, and Goraus, 2013, Goraus and Tyrowicz, 2014);
- The GPG at firm level is found to be around 0.12;
- Similarly to the main results, public institutions are found to display slightly lower adjusted GPG than private firms (app. 12% and 13%);

- The role of female and female managers in explaining GPG in monthly remunaration turns out, however, to be much more relevant.

ROBUSTNESS ANALYSIS

Coefficients on the shares of women and female managers obtained from OLS estimation of firm level gender pay gaps in monthly remunaration

Firm level share of:	Model 1		Model 2	
	Private	Public	Private	Public
Women	0.057***	-0.064***	0.068***	-0.045***
	(0.004)	(0.002)	(0.004)	(0.002)
Female managers	-0.054***	0.026***	-0.060***	0.025***
	(0.004)	(0.001)	(0.004)	(0.001)
Controls:				
NACE	Yes		Yes	
Regions	Yes		Yes	
Firm size	Yes		Yes	
Co-worker characteristics	No		Yes	

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1;
Co-workers characteristics include: share of workers aged 25-29, share of workers aged 55+, share of tertiary educated workers, Share of part-time workers, share of temporary workers.