

Collective Bargaining, Wage Floors, and the Racial Earnings Gap

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Motivation

- ▶ Unions and collective bargaining (CB) shown to reduce inequality (Farber et al., 2021)
- ▶ Unions and CB can reduce between group inequality (Biasi and Sarsons, 2021)
- ▶ The evidence on union impacts on racial gaps is mixed
 - ▶ Asterlofer (1973) finds that exclusion from unions can offset higher premiums for Black workers in the US
 - ▶ Differentials in coverage and premiums are key to union/CB effects on racial earnings gaps
- ▶ Evidence from other post-slavery societies is lacking

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 - ▶ *Asterhan et al. (2023)* finds that exclusion from unions can offset higher premiums for Black workers in the US
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Our paper and contribution

- ▶ We study the impact of collective bargaining on inequality and the racial earnings gaps in Brazil
 - Major post-slavery economy with excellent administrative data
 - Substantial and persistent racial inequality
- ▶ We scrape the universe of collective bargaining agreements (CBAs; $\approx 430K$) and link to establishments
- ▶ Describe union/CB landscape for each racial group
 - Union density and coverage over time
 - Differentials in coverage vs. premiums
- ▶ Analyze a key union policy: wage floors (WFs)
 - How do WF's affect inequality, rent, and surplus by racial group?
 - What is the impact of WF's on labor market outcomes?
 - What are the consequences during these crises?

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Main results

- ▶ Unlike US, CB associated with 2.5 log pt larger racial earnings gap in Brazil ($\approx 10\%$ of unadjusted gap)
 - Small differentials in coverage; driven by geography
 - 80% of effect driven by differentials in premiums
 - Why do unions benefit white workers more, even when nonwhite workers tend to have low wage jobs?
- ▶ We examine role of key union policy: wage floors
 - Null employment effects; no compensating differentials
 - Earnings compress from below, i.e., 50/10 ratio falls by $\approx 6\%$
 - No impact on racial gaps; differential in how binding WFs are
- ▶ Mechanisms behind racial gap in wage floor coverage
 - Nonwhite new hires over-represented below WF; white new hires over-represented above WF
 - Differential not explained by occupation, suggesting enforcement issues over exemption in union policy
- ▶ Wage floors unlikely to diminish the premium gap, but better WF coverage could reduce inequality more

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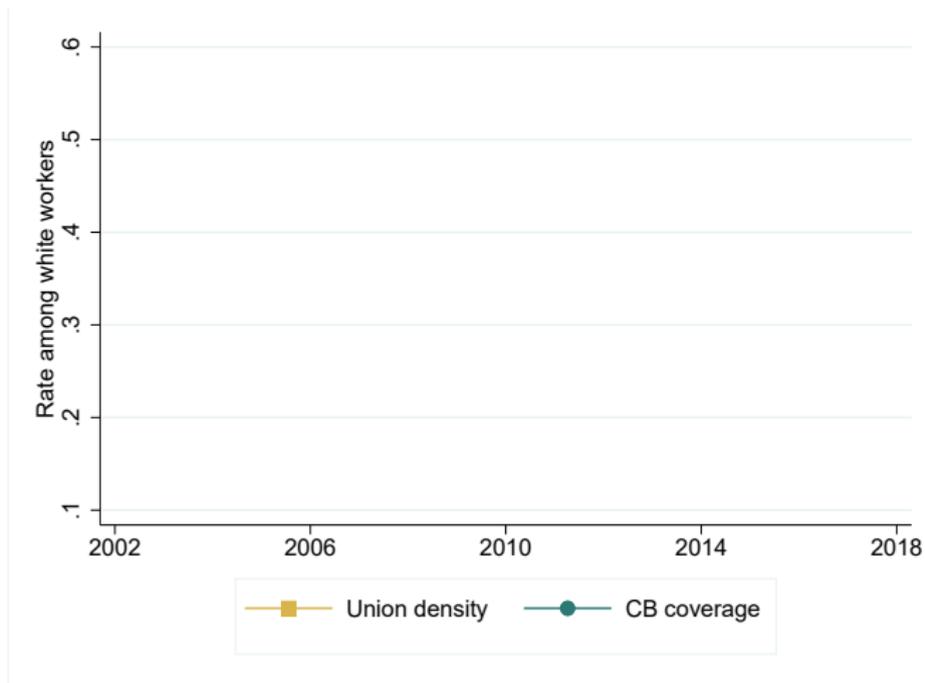
Outline

- 1 Unions and collective bargaining in Brazil
- 2 Impact of wage floors: bunching with DiD
- 3 Mechanisms: DiD on worker transitions

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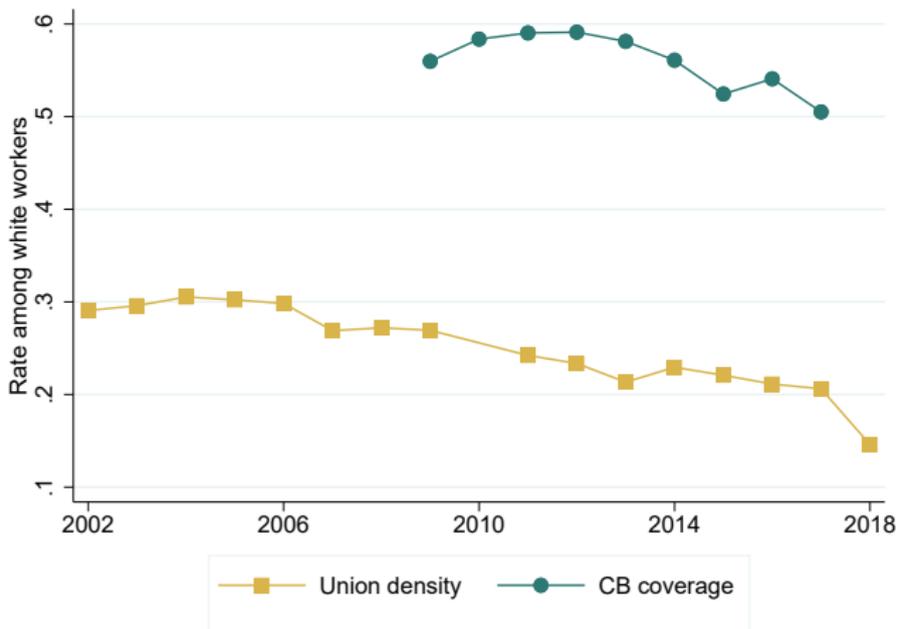
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Union density and CB coverage



- ▶ In Brazil, union membership not required for CB coverage
- ▶ 50%+ CB coverage; but $\approx 11K$ unions \implies variation in CBAs

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Data sources and samples

1. Universe of registered CBAs (*Sistema Mediador*)
 - Online system for writing, filing, and registering CBAs
 - Clauses already categorized into groups
2. Linked employer-employee data (RAIS)
 - Annual survey covering the entire formal sector
 - Earnings and contracted wages from December

Merging CBAs to establishment of coverage, we use

- a) 10% random sample of private sector workers in RAIS... overall effect of CB ●
- b) Establishment-level panel tracking the yearly changes in “primary” wage floors... impact of WF conditional on coverage

Stats

Panel

At floors

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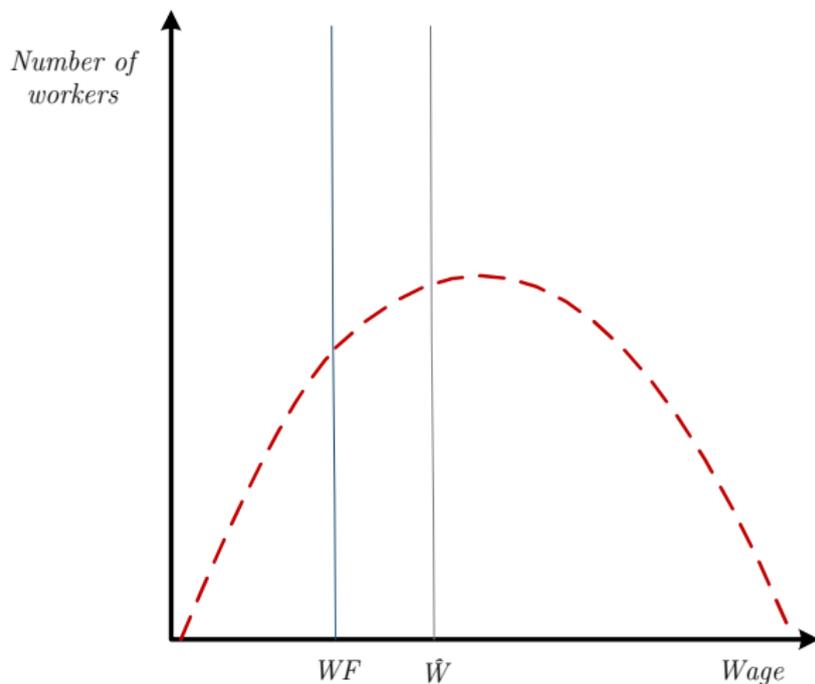
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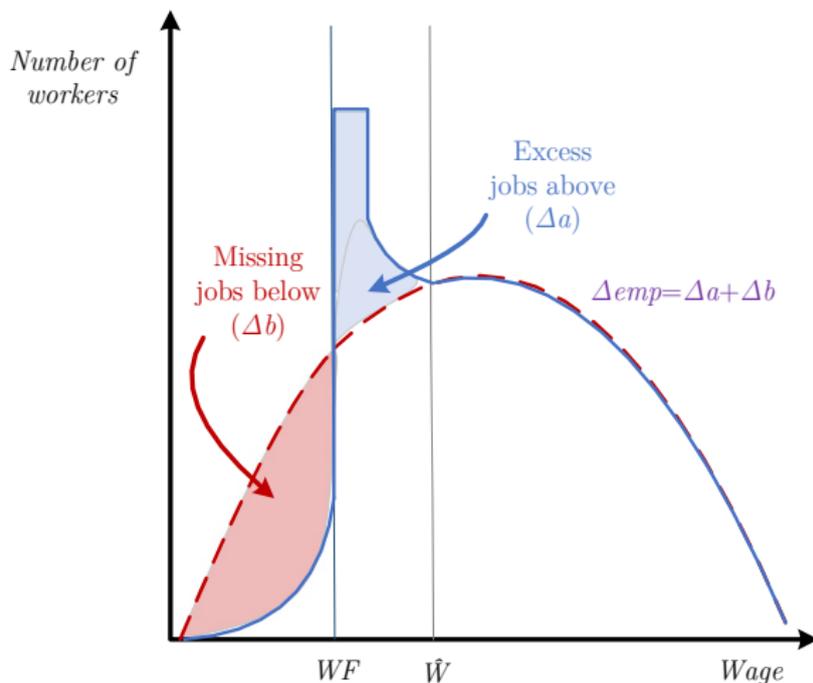
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Wage floors and the distribution of wages



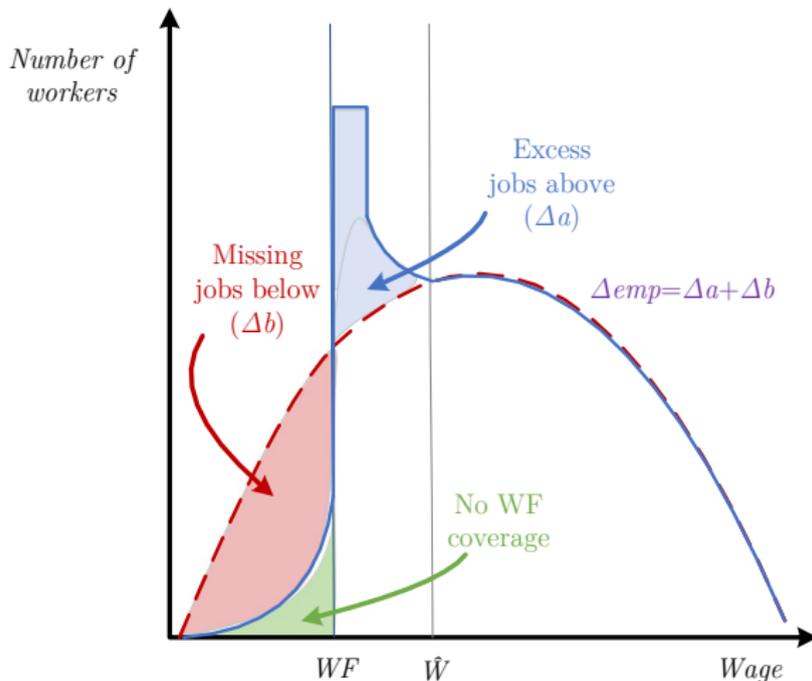
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- ▶ Wage floor coverage effects = share of workers at or above WF

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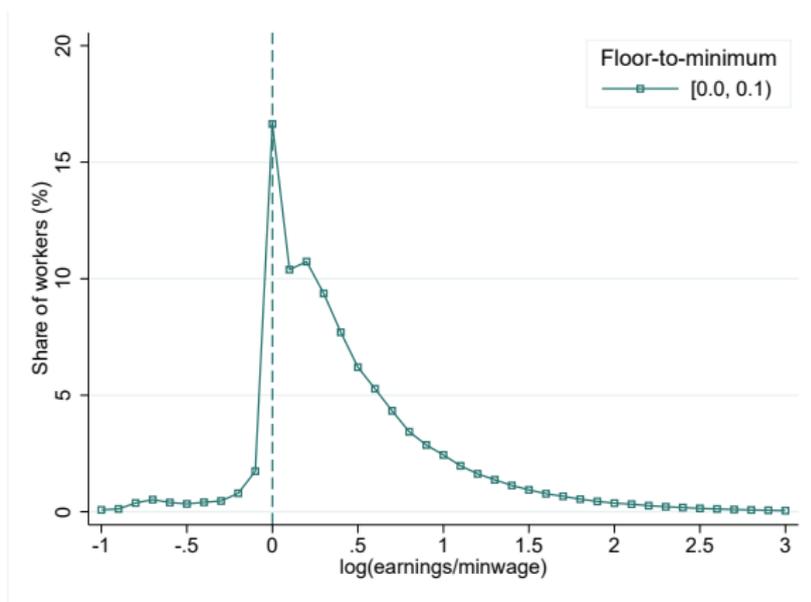
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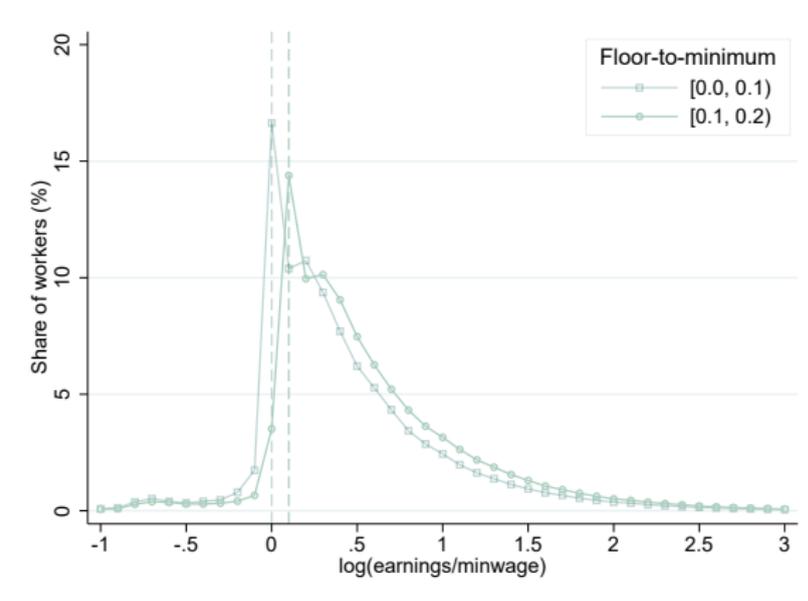
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Earnings distributions bunch at primary wage floors



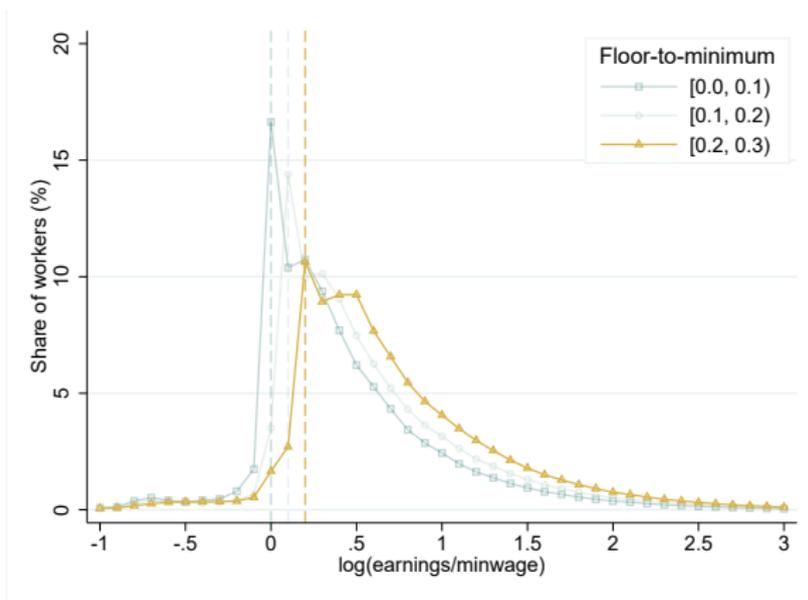
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- ▶ Higher wage floors seem less binding (enforcement vs. union policy)

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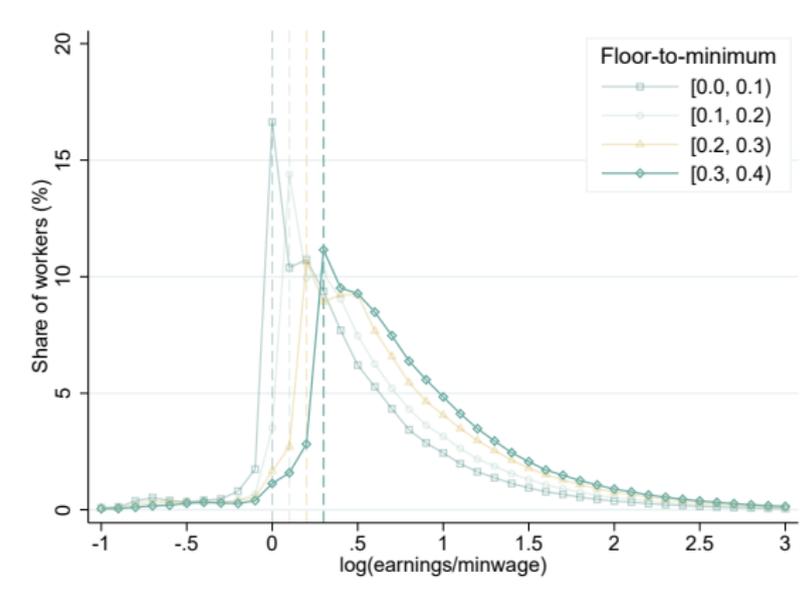
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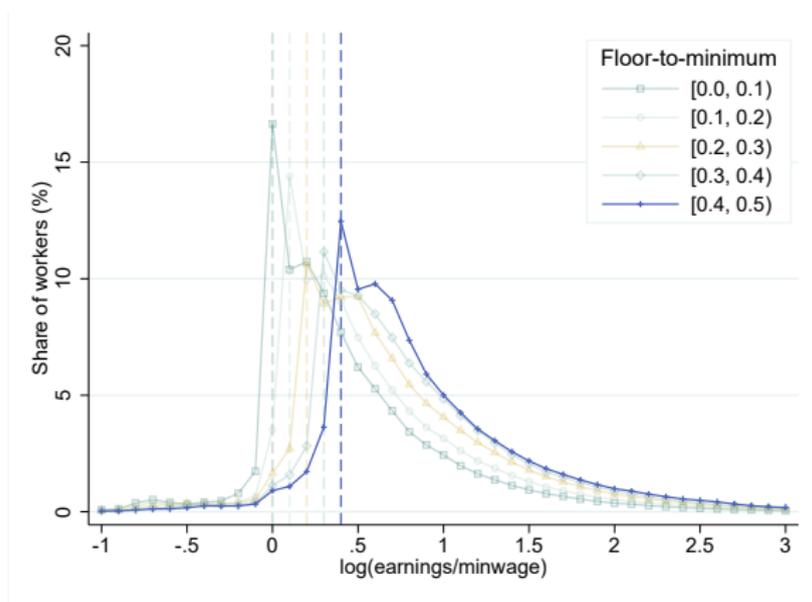
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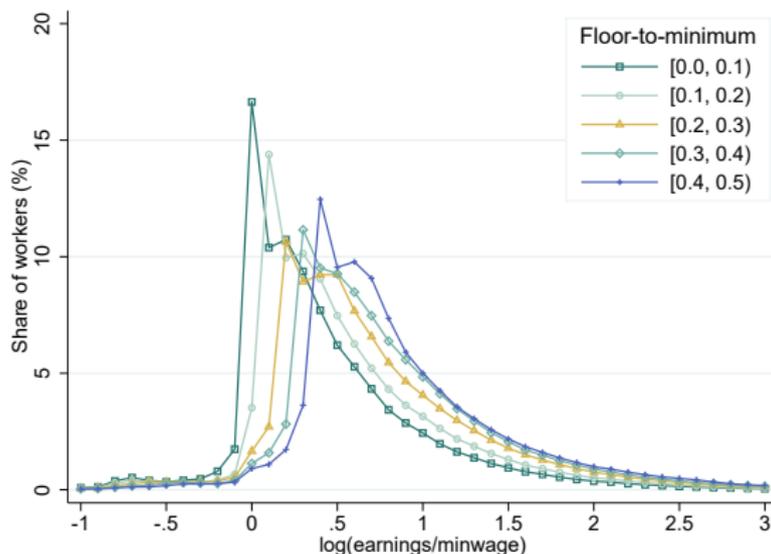
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Bunching and DiD design

- ▶ **Treated:** group of establishments (s) that experience a similar event (h) in a specific event-year (t)
 - Event: $\Delta floor \geq 5$ log pts; $\log(floor) - \log(minwage) \geq 0.05$
 - Event-year: $t \in [2011, 2013]$ to allow $\tau \in [-3, 4]$
 - Similar event: $floor_{-1}$ and $floor_0$ are in the same R\$40 bucket (k); pre-period wage floors are stable
- ▶ **Control:** group of establishments similar to the treated group with close pre-period wage floors but no event
 - Similar to treated: must be in the same region \times size \times industry
 - Close pre-period floors: $floor_{-1}$ is in the same R\$40 bucket as treated; wage floors in the pre-period are stable
 - There are no events (as defined for treated) in the post-period

- ▶ **Specification:** stacked DiD pooling all wage floor events

$$Y_{stkh} = \sum_{j=-3}^4 \alpha_{jk} (D_s \times \delta_{\tau=j}) + \mu_s + \delta_\tau + \gamma_t + u_{stkh}$$

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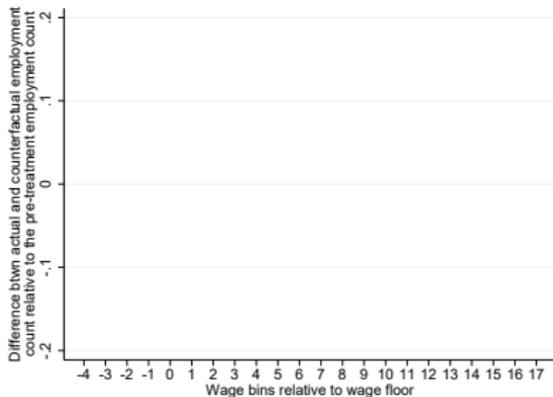
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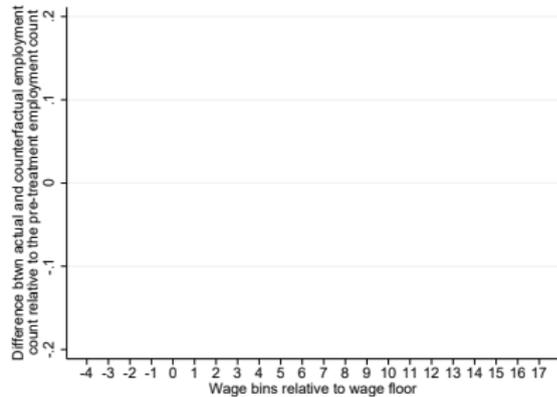
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Short-run impact on the wage distribution

White workers



Nonwhite workers



- ▶ Localized effects around the new wage floor
- ▶ Null employment effects in the short-run

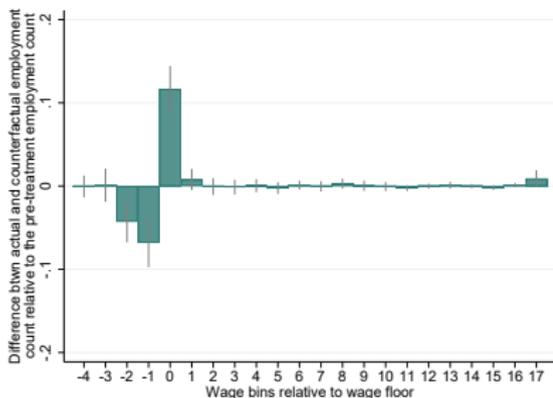
Overall

Tenure

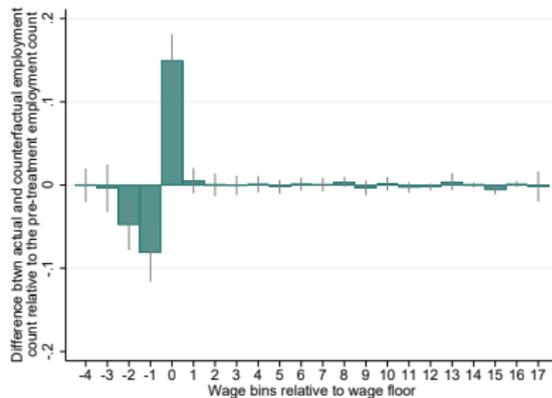
Amenities

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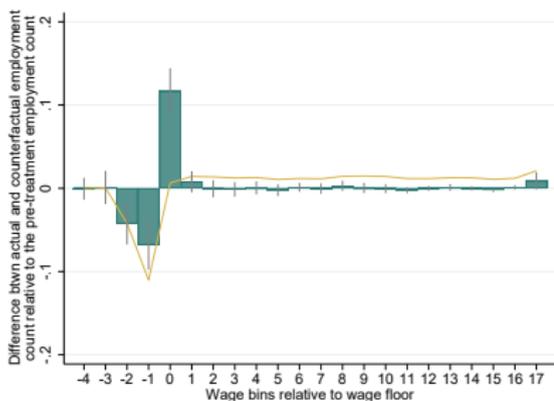
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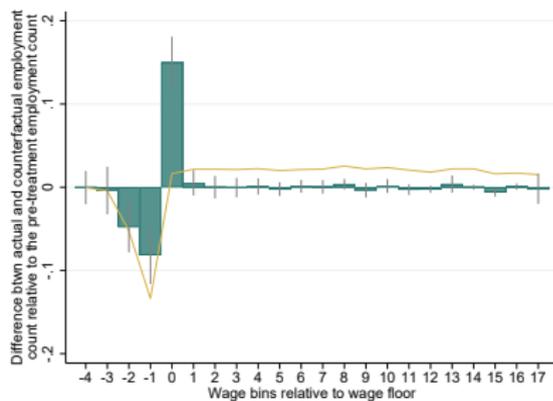
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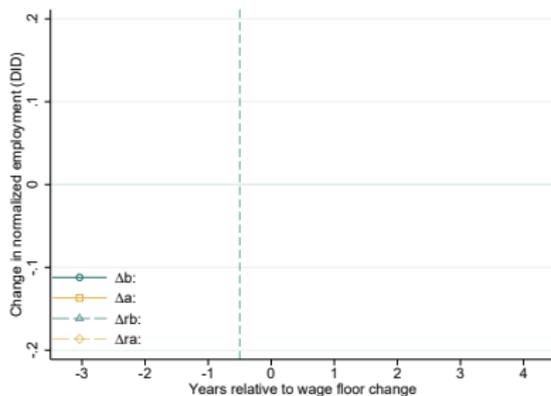
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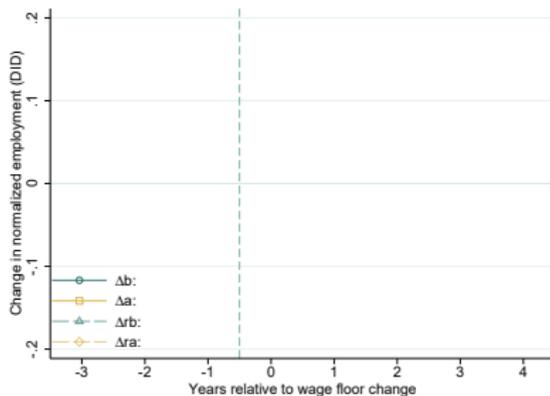
Long-run impact of WFs on missing and excess jobs

“Just below” bins: $b = k \in \{-3, -2, -1\}$; “Just above” bins: $a = k \in \{0, 1, 2\}$

White workers



Nonwhite workers

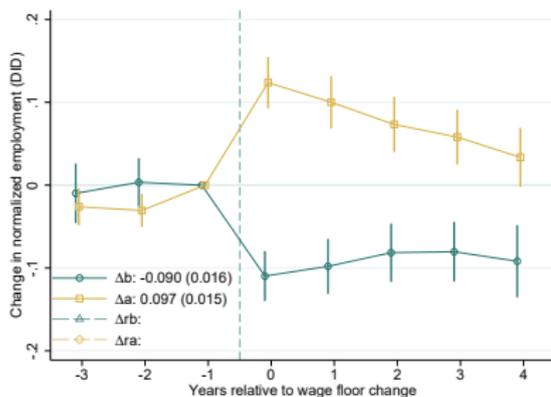


- ▶ Null employment effects in the long run ($\Delta a + \Delta b \approx 0$)
- ▶ ≈ 3 ppt larger shift in mass among nonwhite workers

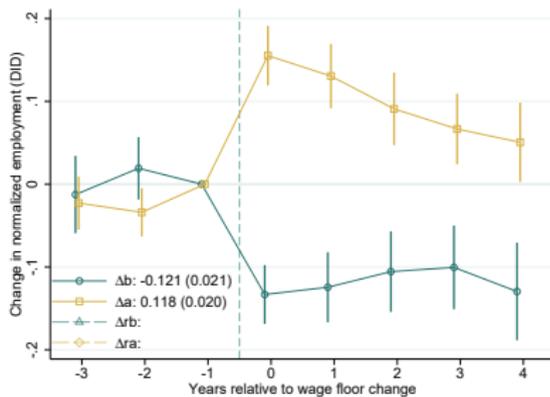
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DiD regression results

Original bunching sample			Simulation: general floor & full compliance		
Mean earnings	50/10 earnings ratio	Wage floor coverage	Mean earnings	50/10 earnings ratio	Wage floor coverage
(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: White workers</i>					
$(D_s = 1) \times (\tau \geq 0)$					
Mean outcome					
Adjusted R2					
<i>Panel B: Nonwhite workers</i>					
$(D_s = 1) \times (\tau \geq 0)$					
Mean outcome					
Adjusted R2					
<i>Panel C: Racial gaps</i>					
$(D_s = 1) \times (\tau \geq 0)$					
Mean outcome					
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- ▶ Compression from below; no impact on racial gap at the mean
- ▶ Full coverage would reduce racial gap by 1.1 log pts ($\approx 7\%$ decrease)

Mean

50/10 ratio

WF coverage

Drop-top

DiD regression results

	Original bunching sample			Simulation: general floor & full compliance		
	Mean earnings	50/10 earnings ratio	Wage floor coverage	Mean earnings	50/10 earnings ratio	Wage floor coverage
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: White workers</i>						
$(Ds=1) \times (\tau \geq 0)$	0.009 (0.012)	-0.024** (0.011)	-0.083*** (0.011)			
Mean outcome	2,204	0.495	0.931			
Adjusted R2	0.96	0.89	0.60			
<i>Panel B: Nonwhite workers</i>						
$(Ds=1) \times (\tau \geq 0)$	0.011 (0.012)	-0.029*** (0.009)	-0.112*** (0.013)			
Mean outcome	1,885	0.412	0.908			
Adjusted R2	0.94	0.79	0.66			
<i>Panel C: Racial gaps</i>						
$(Ds=1) \times (\tau \geq 0)$	0.002 (0.008)	-0.005 (0.011)	-0.028*** (0.007)			
Mean outcome	-0.156	-0.083	-0.023			
Adjusted R2	0.87	0.73	0.60			

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Mean

50/10 ratio

WF coverage

Drop-top

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<i>Panel A: White workers</i>						
$(Ds=1) \times (\tau \geq 0)$	0.009 (0.012)	-0.024** (0.011)	-0.083*** (0.011)	0.032** (0.012)	-0.053*** (0.012)	0.044*** (0.012)
Mean outcome	2,204	0.495	0.931	2,204	0.495	0.931
Adjusted R2	0.96	0.89	0.60	0.96	0.87	0.66
<i>Panel B: Nonwhite workers</i>						
$(Ds=1) \times (\tau \geq 0)$	0.011 (0.012)	-0.029*** (0.009)	-0.112*** (0.013)	0.043*** (0.012)	-0.086*** (0.011)	0.058*** (0.015)
Mean outcome	1,885	0.412	0.908	1,885	0.412	0.908
Adjusted R2	0.94	0.79	0.66	0.94	0.75	0.69
<i>Panel C: Racial gaps</i>						
$(Ds=1) \times (\tau \geq 0)$	0.002 (0.008)	-0.005 (0.011)	-0.028*** (0.007)	0.011 (0.008)	-0.033*** (0.012)	0.014* (0.008)
Mean outcome	-0.156	-0.083	-0.023	-0.156	-0.083	-0.023
Adjusted R2	0.87	0.73	0.60	0.87	0.72	0.48

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50/10 ratio

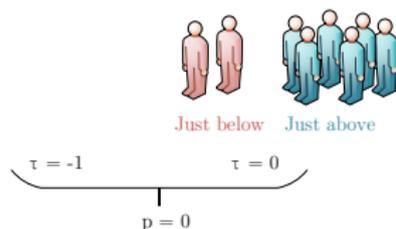
WF coverage

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DiD on worker transitions

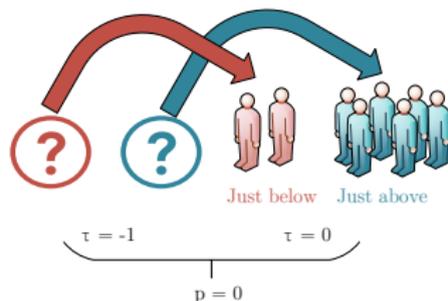


Where are workers near the new WF coming from? Does this change when the wage floor is introduced?

$$\mathbb{1}\{Hire\}_{ipk} = \sum_{j=-2}^0 \alpha_{jk} (D_i \times \delta_{p=j}) + \delta_p + \gamma_t + \phi_i + u_{ipk}$$

- ▶ Union policy: add occupation fixed effects
- ▶ Racial differentials: interact NW_i with D_i and $\delta_{p=j}$

DiD on worker transitions

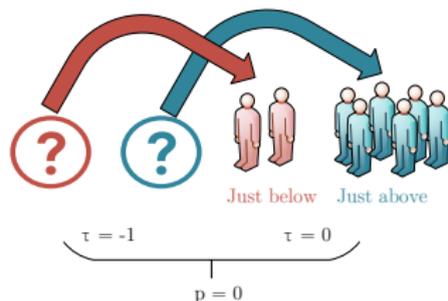


Where are workers near the new WF coming from? Does this change when the wage floor is introduced?

$$\mathbb{1}\{Hire\}_{ipk} = \sum_{j=-2}^0 \alpha_{jk} (D_i \times \delta_{p=j}) + \delta_p + \gamma_t + \phi_i + u_{ipk}$$

- ▶ Union policy: add occupation fixed effects
- ▶ Racial differentials: interact NW_i with D_i and $\delta_{p=j}$

DiD on worker transitions

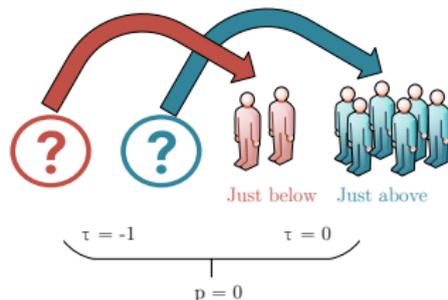


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Origin of workers near WF

Outcome: hired indicator (<i>wage bins at destination</i>)	Just below	Just above	Just below	Just above
	(w/o occupation FEs)		(with occupation FEs)	
	(1)	(2)	(3)	(4)
$(D_i=1) \times (p=0)$				
$(D_i=1) \times (p=0) \times (NW_i=1)$				
Sum of coefficients				
Adjusted R2				
Observations				

- ▶ Differential in how hires are distributed by race around WF
- ▶ Occupations-specific WFs don't explain this differential

Education

DiD

Origin of workers near WF

Outcome: hired indicator (<i>wage bins at destination</i>)	Just below	Just above	Just below	Just above
	(w/o occupation FEs)		(with occupation FEs)	
	(1)	(2)	(3)	(4)
$(D_i=1) \times (p=0)$	0.004 (0.013)	0.021* (0.011)		
$(D_i=1) \times (p=0) \times (NW_i=1)$	0.027* (0.016)	-0.026* (0.014)		
Sum of coefficients	0.031** (0.016)	-0.005 (0.015)		
Adjusted R2	0.147	0.145		
Observations	650,209	541,569		

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	(1)	(2)	(3)	(4)
$(D_{i=1}) \times (p=0)$	0.004 (0.013)	0.021* (0.011)	0.002 (0.013)	0.022** (0.011)
$(D_{i=1}) \times (p=0) \times (NW_{i=1})$	0.027* (0.016)	-0.026* (0.014)	0.026* (0.016)	-0.026* (0.014)
Sum of coefficients	0.031** (0.016)	-0.005 (0.015)	0.028* (0.016)	-0.004 (0.015)
Adjusted R2	0.147	0.145	0.149	0.147
Observations	650,209	541,569	650,133	541,531

- ▶ Differential in how hires are distributed by race around WF
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Education

DiD

Conclusion

- ▶ CB can reduce inequality, but there is little evidence outside high-income countries
- ▶ We study CB in Brazil where union premiums are larger for white than nonwhite workers
- ▶ Examining a key union policy (i.e., wage floors), we find
 - No reduction in the earnings gap within covered workplaces
 - Discretionary enforcement limits effects on inequality
 - Nonwhite hires are more likely to slip from coverage
- ▶ Different from evidence on other floors, e.g., minimum wage
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Collective Bargaining, Wage Floors, and the Racial Earnings Gap

Ellora Derenoncourt
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Lorenzo Lagos
(Brown)

Claire Montialoux
(UC Berkeley)

NBER Summer Institute: Labor Studies

July 26, 2021

Racial gaps in coverage and premiums

	Racial differentials			
	(1)	(2)	(3)	(4)
Coverage	-0.028 (0.002)	-0.026 (0.002)	0.017 (0.001)	0.019 (0.001)
Premiums	-0.118 (0.005)	-0.053 (0.002)	-0.060 (0.002)	-0.043 (0.002)
Year	yes	yes	yes	yes
Ind + occup	no	yes	yes	yes
Micro-region	no	no	yes	yes
Worker charact	no	no	no	yes

Return

Racial gaps in density, coverage, and premiums

	Racial differentials		
	PNAD	PNAD	RAIS
	private sector	private-formal	private-formal
	(1)	(2)	(3)
Union density	-0.033 (0.001)	-0.028 (0.002)	- -
CB coverage	- -	- -	-0.035 (0.002)
Premiums (density)	-0.054 (0.006)	-0.041 (0.005)	- -
Premiums (coverage)	- -	- -	-0.069 (0.003)

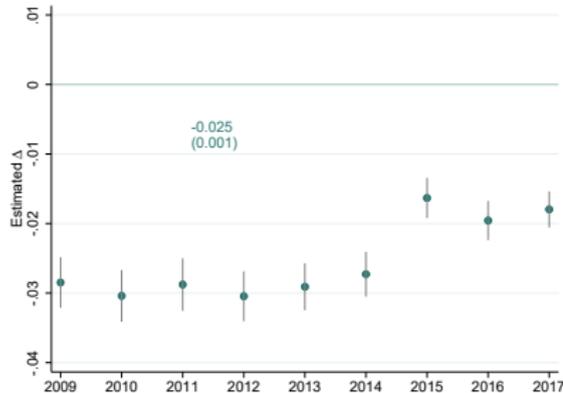
Return

Coverage rates and union premiums by industry

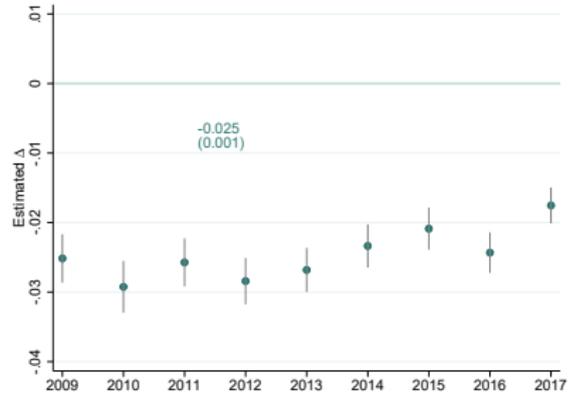
$$\Delta = \sum_j P_{nj} C_{nj} M_{nj} - \sum_j P_{wj} C_{wj} M_{wj}$$

	Coverage rate			Union premium		
	Nonwhite (1)	White (2)	Racial gap (3)	Nonwhite (4)	White (5)	Racial gap (6)
Construction	0.554	0.527	0.026	0.098	0.145	-0.048
Administrative activities	0.620	0.627	-0.008	0.064	0.116	-0.052
Hospitality	0.406	0.418	-0.012	0.050	0.042	0.008
Transportation	0.539	0.581	-0.042	0.075	0.093	-0.018
Real estate	0.526	0.611	-0.085	0.106	0.162	-0.055
Culture	0.431	0.483	-0.052	0.149	0.195	-0.045
Commerce	0.472	0.496	-0.024	0.099	0.148	-0.049
Others	0.351	0.409	-0.058	0.063	0.083	-0.020
Health	0.503	0.538	-0.035	0.036	0.039	-0.003
Professional activities	0.528	0.557	-0.029	0.087	0.176	-0.089
Communication	0.645	0.720	-0.075	0.144	0.238	-0.093
Education	0.405	0.493	-0.088	0.172	0.192	-0.020
Banking	0.607	0.662	-0.055	0.063	0.051	0.012
Manufacturing	0.637	0.649	-0.012	0.115	0.146	-0.032

Impact of CB on gender earnings gap



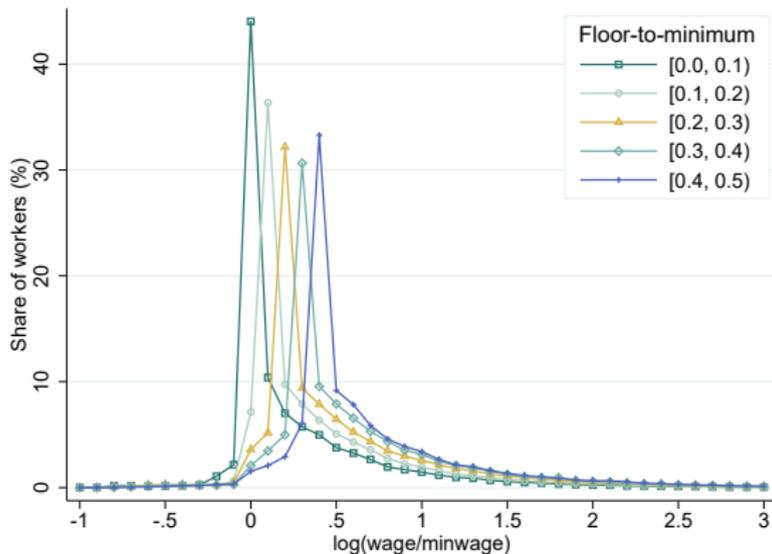
Among men



Among women

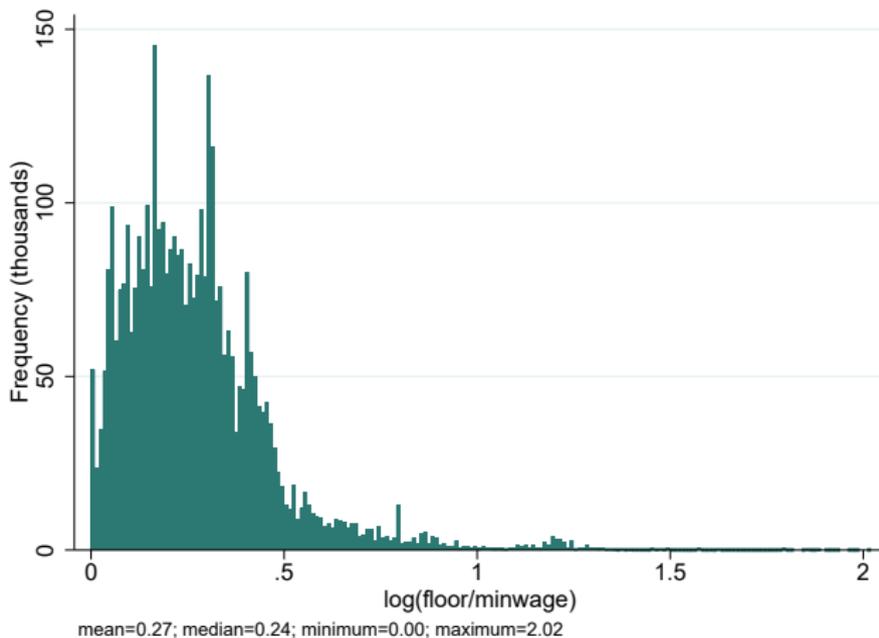
Return

Wage distributions bunch at primary wage floors



Return

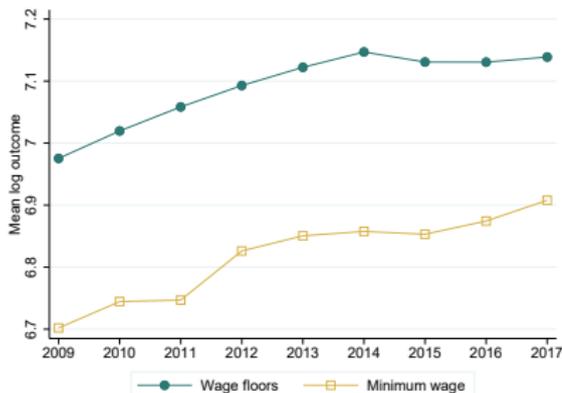
Distribution of floor-to-minimum gaps



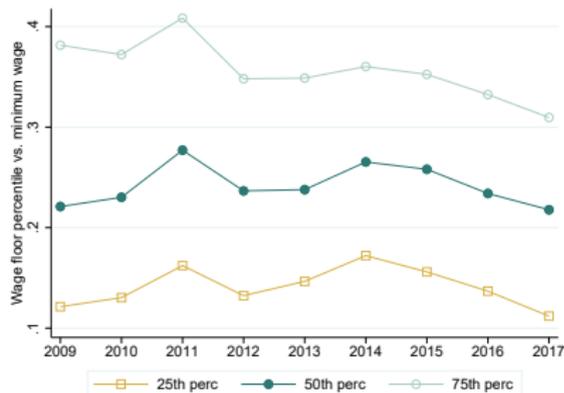
Return

Trends in floors

Wage floors vs. minimum wage



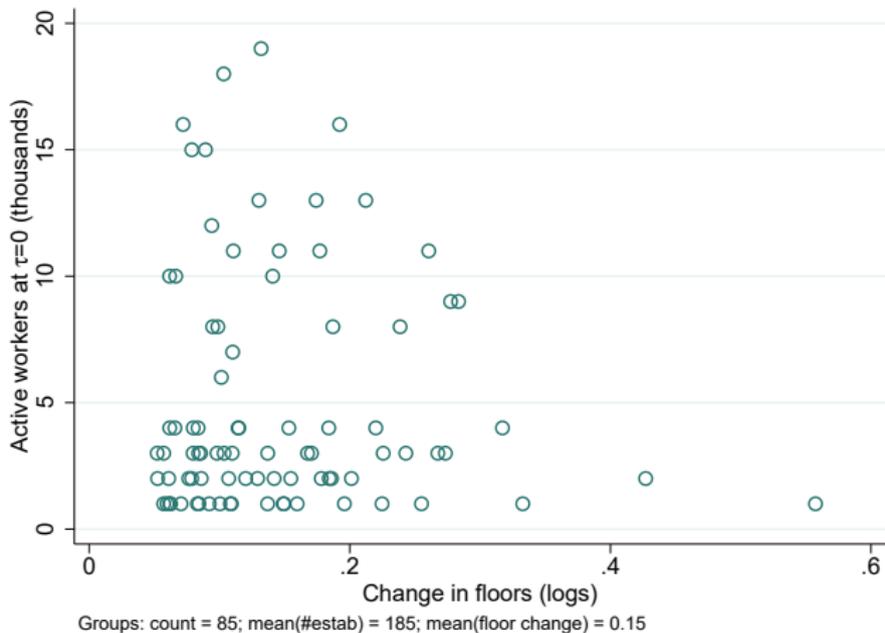
Floor-to-minimum wage gap



- ▶ Mean WF year-to-year growth pre-2015 \approx 3-4%
- ▶ Correlation of year-to-year WF and MW growth is 0.29

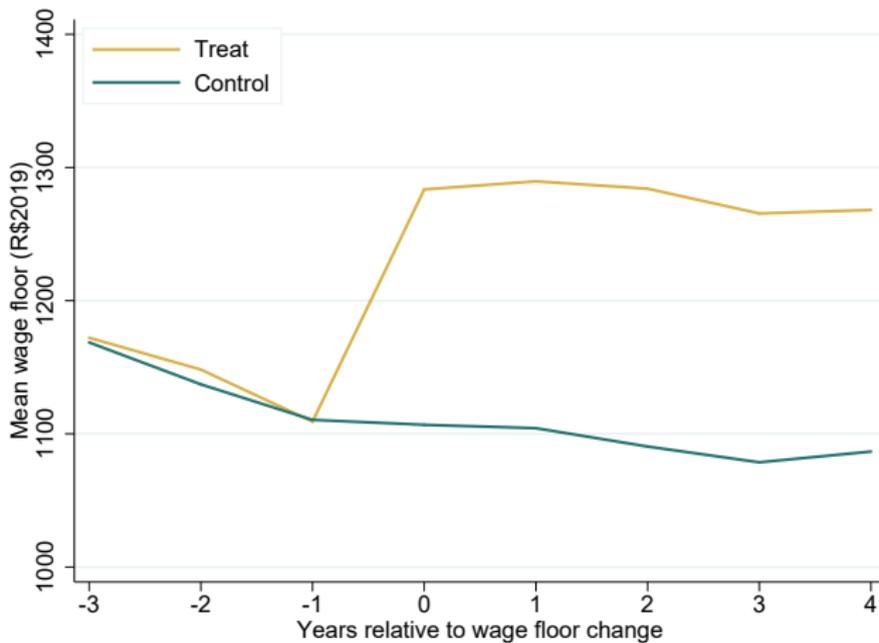
Return

Events by change in floors and observations



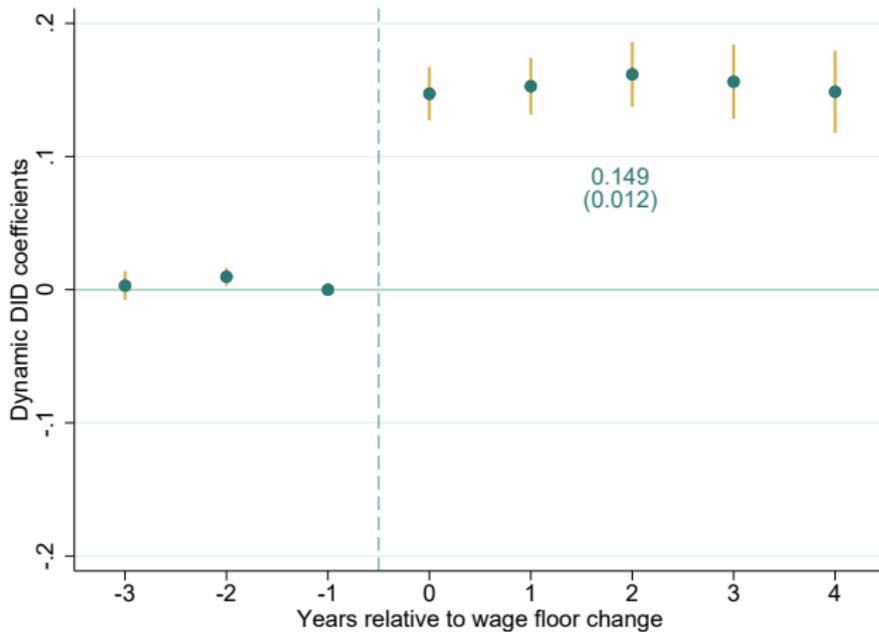
Return

Trends in mean wage floors



[Return](#)

DiD for wage floors



[Return](#)

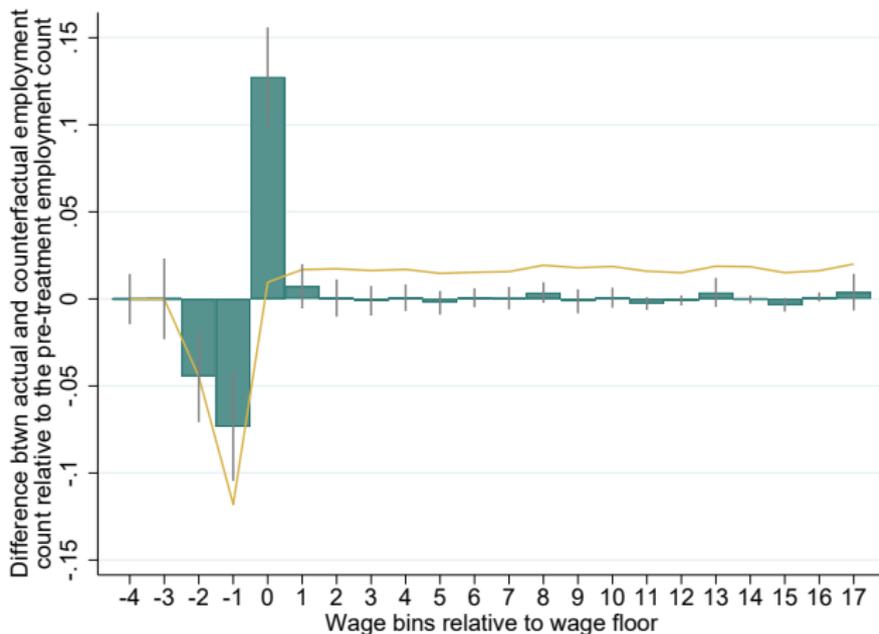
R\$1080 to R\$1160 in 2013

Return

R\$1680 to R\$1840 in 2013

[Return](#)

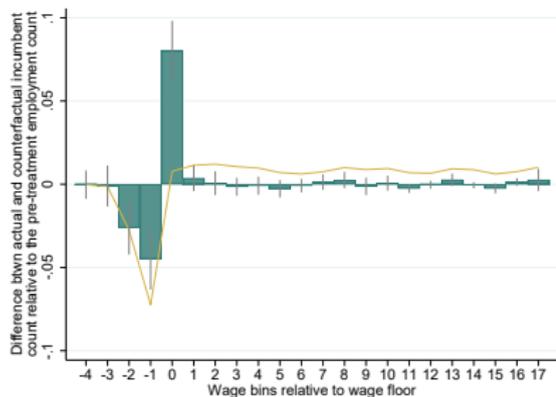
Short-run impact of WFs on the wage distribution



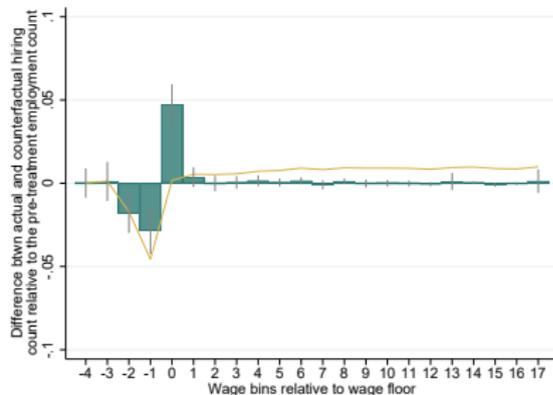
Return

Short-run impact on the wage distribution by tenure

Incumbents



Hires



Return

DiD results for CBA content

Panel A: Counts		Panel D: Classes	
Classes	0.739	Wage deductions	0.014*
Tokens in text	-43.945	Wage isonomy	0.014
		Wage floors	0.000
		Wage adjust./corrections	0.006
		Wage payment	0.017
		Female workforce	0.001
		Youth workforce	0.001
		Outsourced workforce	0.009
		Advanced-age workforce	-0.011
		Employment/hiring rules	0.017
		Other worker groups	-0.007
		People with special needs	-0.014
		Other rules on employment	0.028
		Performance evaluation	0.000
		Adapting work functions	0.000
		Assigning work functions	0.015
		Skilled pay	0.000
		Hazard pay (health risk)	0.015
		Hazard pay (danger risk)	0.006
		On-call pay	-0.001
		Seniority pay	0.007
		Other staff rules	0.006
		Worker particip. in mgmt	0.000
		Task and wage schedule	-0.015*
		Vocational training	0.002
		Transfers	0.030*
		Moral harassment	0.002
		Sexual harassment	0.001
		Tools and equipment	-0.008
		Equal opportunities	0.000
		Disciplinary norms	-0.012
		Other rules on work functions	0.016
		Abortion protections	0.003
		Work-related injury protections	0.007
		Adoption protections	-0.004
		Retirement protections	0.022
		Apprenticeship protections	0.003
		Employment protections	0.013
		Maternity protections	0.028
		Paternity protections	0.004
		Nonwork-related injury protections	0.027*
		Military service protections	0.021
		Other employment protections	-0.009
		Policy for dependents	-0.016
		Policies for employment maintenance	-0.001
		Employment protection program	0.000
		Work on Sundays and holidays	0.000
		Workday compensation	0.008
		Workday controls	0.034
		Weekly rest	0.002**
		Duration and schedule	0.021
		Absences	0.021
		Break intervals	0.009
		Special shifts (women, students, etc.)	-0.006
		Other provisions on the workday	0.057**
		Extension/reduction of workday	-0.014
		On-call rules	0.005
		Uninterrupted shifts	0.026
		Acceptance of medical certificates	0.019
		Accompaniment: work-related injuries	-0.005
		Guarantees: nonwork-related injuries	0.013
		Other rules on injury protections	-0.021
		Rehabilitation of the injured	0.000
		CIPA: accident prevention committee	-0.005
		Health education campaigns	-0.020
		Working environment conditions	-0.012
		Equipments for individual safety	-0.019
		Safety equipment	0.011
		Medical exams	-0.010
		Insalubity	-0.002
		Machine and equipment maintenance	-0.002
		Other rules on prevention	0.016
		Hazard (danger risk)	-0.007
		First aid	0.014
		Health and safety professionals	0.003
		Training for injury prevention	-0.008
		Uniforms	0.007
		Vacation duration and concession	0.019
		Collective vacations	0.016
		Holiday remuneration	0.018
		Abortion leave	-0.009
		Adoption leave	-0.003
		Maternity leave	-0.015
		Paid leave	-0.004
		Unpaid leave	0.025
		Other rules on holidays and leaves	-0.010
		Union access to company information	-0.009
		Union access to workplace	-0.021
		Guarantees to union officers	-0.025
		Leave for union activities	0.004
		Other rules on union-firm relations	0.008
		Proceedures in relation to strikes	0.001
		Factory commission	-0.002
		Union fees	0.009
		Right of opposition to union fees	0.000
		Other rules on union representation	0.006
		Union representative	0.024
		Unionisation campaigns	0.014
		Application of the CBA	0.012
		Non-compliance with the CBA	-0.048*
		Mechanisms for conflict resolution	0.016
		Other provisions	-0.025
		Rules for negotiating	0.015
		Renewal/termination of the CBA	-0.020

Panel B: Clause groups

Wages	0.000
Bonus, pays, assistances	0.045**
Employment contract	0.017
Working conditions	0.024
Workday rules	0.022
Health and safety	0.023
Holidays and leaves	0.031
Union relations	0.034**
General provisions	0.014

Panel C: Clause subgroups

Wage adjustment	0.000
Wage payment	0.017
Other: wages	0.010
Other: adjust., payments	-0.011
Bonuses	0.002
Pays	0.052**
Assistances	0.049**
Other income	0.027
Separations	0.001
Contract types	-0.007
Hiring	0.041
Other: emp. contract	-0.001
Staffing rules	0.024
Working conditions	0.022
Emp. protections	0.030
Workday rules	0.022
Health/safety protections	0.018
Health/safety prevention	0.025
Holidays	0.028
Leaves	-0.001
Other: holidays and leaves	-0.010
Union-firm relations	0.009
Union organisation	0.027
General provisions	0.014

Compensating differentials

$$\mathbb{1}\{Clause_{ct}\} = \beta_0 + \beta_1 D_c + \beta_2 P_t + \beta_3 (D_c \times P_t) + \gamma X_{ct} + \varepsilon_{ct}$$

DiD to test for CBA changes paired with wage floor increases

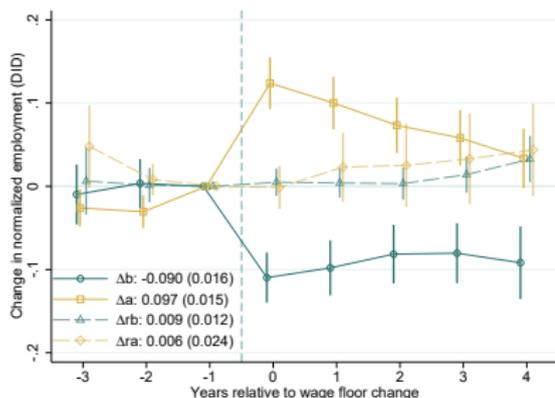
- ▶ $\mathbb{1}\{Clause_{ct}\}$: indicator for a clause type being in the CBA
- ▶ D_c : indicator for CBA in a treated pair, i.e., wage floor ↗
- ▶ P_t : indicator for the event-year CBA, i.e., $\tau = 0$
- ▶ X_{ct} : fixed effects for year, firm-level vs. sectoral CBA, negotiation month, state where registered, and main union
- ▶ Standard errors clustered at the union level

[Results](#)[Return](#)

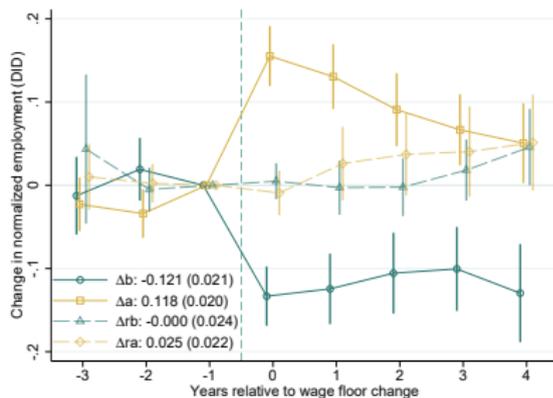
Long-run impact of WFs on missing and excess jobs

“Just below” bins: $b = k \in \{-3, -2, -1\}$; “Just above” bins: $a = k \in \{0, 1, 2\}$
 “Rest below” bins: $rb = k < -3$; “Rest above” bins: $ra = k > 2$

White workers



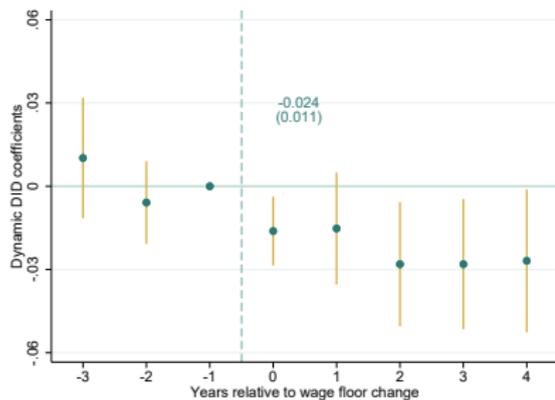
Nonwhite workers



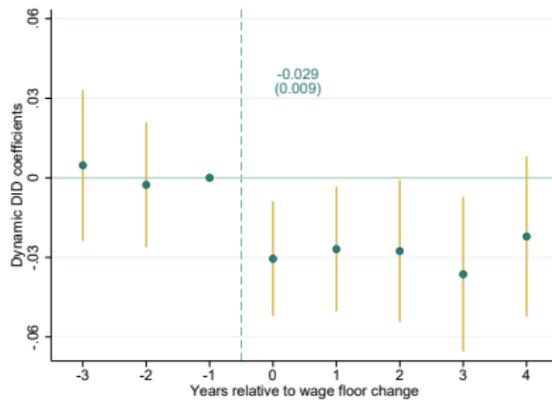
Return

50/10 earnings ratio

White workers



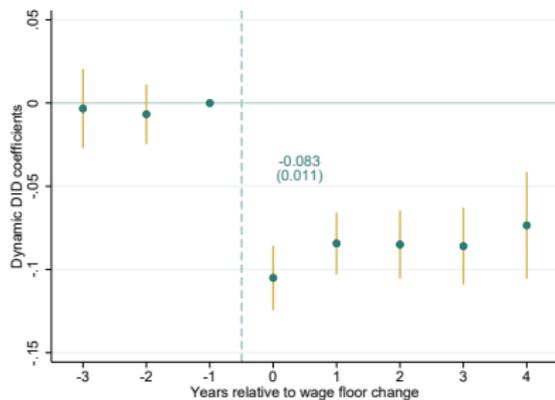
Nonwhite workers



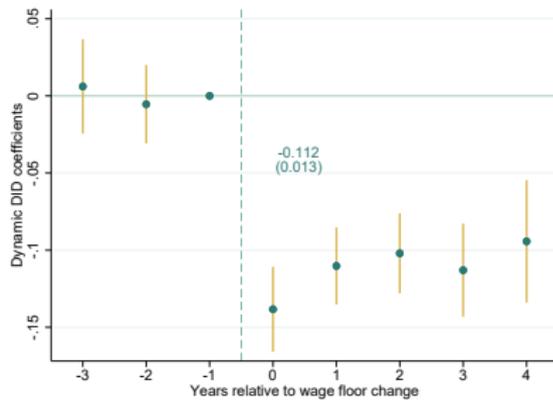
Return

Wage floor coverage

White workers



Nonwhite workers



Return

Origin of workers near WF

