Central bargaining and spillovers in local labor markets

ASSA 2022 Virtual Annual meeting

Panel session on *Collective Bargaining, Wages, and Inequality*

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01/07/2022

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Motivation

- Centralized bargaining institutions with partial coverage are pervasive (at least 40 countries recording over 30% coverage)
- Need to update our understanding to labor markets with **employer wage-setting power, strategic interaction, and localization**
- Key questions
  - Does sectoral bargaining reduce markdowns through raising wages?
  - Do these wage effects spill over onto "close" firms?
  - How do these constraints influence the structure of wages and jobs in the broader labor market?
- Match bargaining council agreements between 2008 and 2018 in South Africa, with worker and firm-level panel data

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Contribution

- Spillovers from institutional wage increases (Existence of spillovers: Fortin, Lemieux, and Lloyd 2021; Lee 1999; Muralidharan, Niehaus, and Sukhtankar 2017; Firm level spillovers: Derenoncourt et al. 2021; Staiger, Spetz, and Phibbs 2010)
  - Institution of central bargaining: Much larger proportion of workers affected (here 40%), and not just small low-wage firms. (Berger, Herkenhoff, and Mongey 2019)
  - Identify spillovers through local labor markets connected by worker flows. (Caldwell and Harmon 2019; Poole 2013; Schubert, Stansbury, and Taska 2020)
- Collective bargaining effects on covered firms
  - First comprehensive profile of South African labor market. (Card and Cardoso 2021; Magruder 2012)
  - Re-allocation: Low productivity firms contract, high productivity firms expand. (Dustmann et al. 2021)

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- Strategic competition: Arnold 2020; Berger, Herkenhoff, and Mongey 2019; Jarosch, Nimcsik, and Sorkin 2019
- Localized labor markets
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Static logit model

- Standard utility: $V(w_j) = \beta ln(w_j) + \nu_{ij}$
- Probability worker is employed at firm $lnp_j = \beta ln(w_j) - ln(\sum_k^J w_k^\beta)$, with associated firm labor supply elasticity $\varepsilon_{jj} = \frac{\partial lnp_j}{\partial lnw_j} = \beta(1 - p_j)$.
- Firms optimize profits
  $\pi_j = \max_{w_j} \frac{1}{1-\eta} A_j (p_j(w_j)N)^{1-\eta} - w_j \cdot p_j(w_j)N$
- Wages
  $lnw_j = \frac{1}{1+\eta\beta}(ln(\frac{\varepsilon_{jj}}{1+\varepsilon_{jj}}) + lnA_j - \eta ln(N) + \eta ln(\sum w_l^\beta))$
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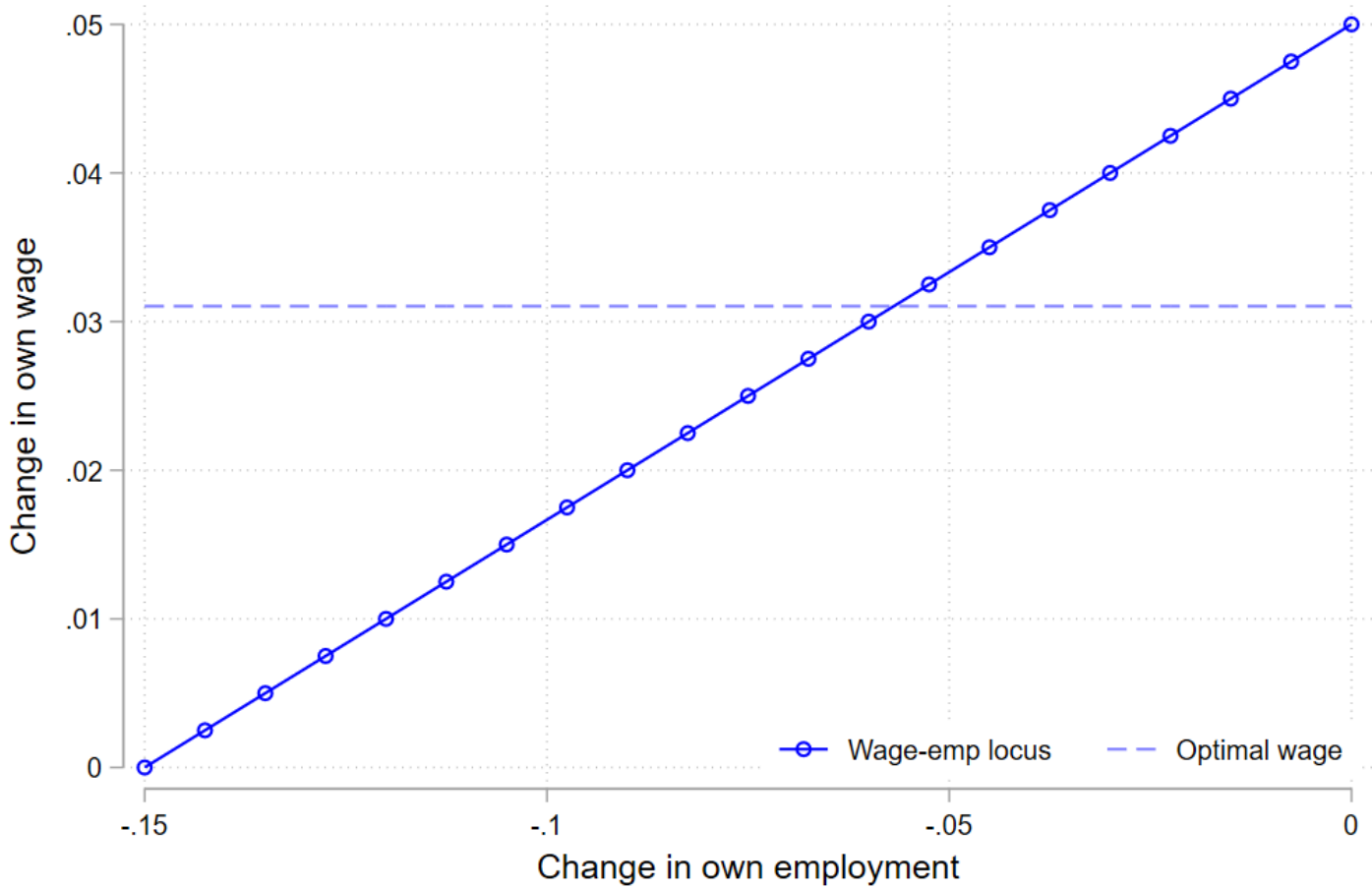
Wage-employment locus faced by spillover firms



Dynamic logit model

- Follows Caldwell, Dube, and Naidu forthcoming; Langella and Manning 2021: Preference heterogeneity + search + consideration sets.
- Idiosyncratic preferences ϵ_{ijt} redrawn every period. With probability λ the worker receives offers from a consideration set S of connected firms.
- Innovation: spillover effects proportional to flows

$$\frac{\partial ln(n_{j,s})}{\partial lnw_k} = \frac{\partial ln(R_{j,s})}{\partial lnw_k} - \frac{\partial ln(q_{j,s})}{\partial lnw_k}$$

$$= -\beta \cdot \Big(\underbrace{\frac{p_k \cdot \lambda p_j \sum_{l \neq j}^{S} (p_l N_{l,s'})}{R_{j,s}}}_{\text{Prop. j's hires from k}} + \underbrace{\frac{p_k \cdot \lambda p_j}{q_{j,s}}}_{\text{Prop. j's quits to k}} \Big)$$

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Data collection process

1. Collect agreements for all 39 bargaining councils over 2008-2018
2. Record wages of general occupation (usually lowest), along with corresponding district council and industry in contract (some error)
3. Match wages to employer-employee data by location×industry, using tax data from 2008-2018 (described earlier in essay 2)

- Sources of error: location×industry matching, occupation differences
- This is the first comprehensive profile of bargaining councils in South Africa

More on institutional structure of SA labor market.

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Bargaining council workers by earnings decile

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Stacked event-study design

- Event definition: Real wage increase $\geq 3\%$
- Event time: Clean pre-period of 3 years, post period of at least 3 years, i.e. admits events 2011-2016
- Sample: Firm level, balanced firms, at least 10 workers in pre-period

- $\sim$50 events, $\sim$50,000 bargaining council firms

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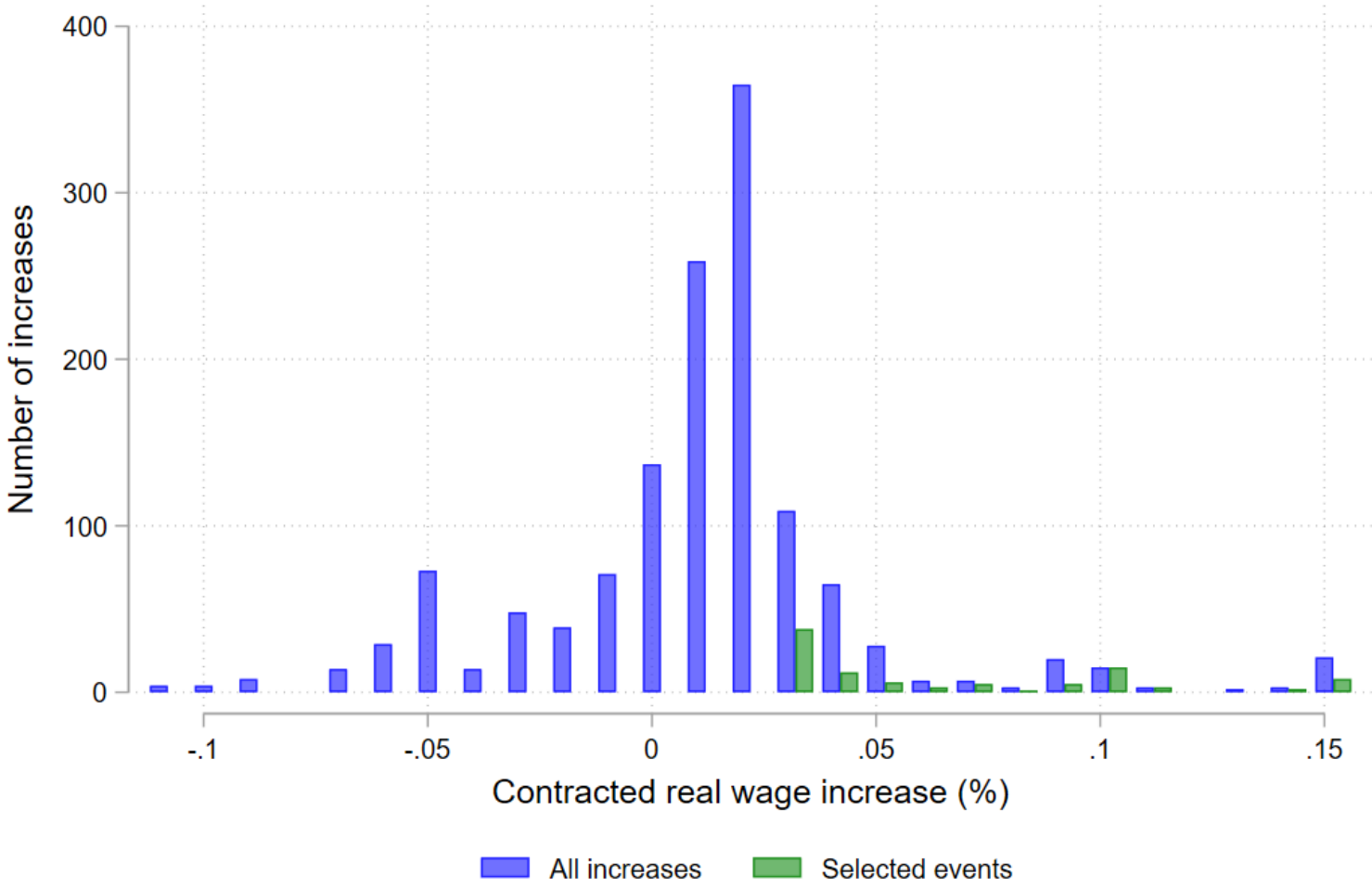
Selected wage events



Specification for bargaining council firms

- Main specification

$$y_{j,t} = \sum_{t=-3}^{-2} \delta_t(\tau_t \times treat_j) + \sum_{t=0}^{2} \delta_t(\tau_t \times treat_j) + \phi_j + \theta_{event \times loc. \times t} + \gamma_{firmsize_{t=-2} \times t} + \alpha_{wage_{t=-2} \times t} + \beta_{\Delta lnfirmsize_{t<-1} \times t} + \psi_{\Delta lnwage_{t<-1} \times t} + e_{j,t}$$

- Compares bargaining council firms to other firms within the same location, of similar firm size, and wage/employment growth, netting out level firm differences.
- Exclude potential spillover firms (defined later), cluster at industry×location

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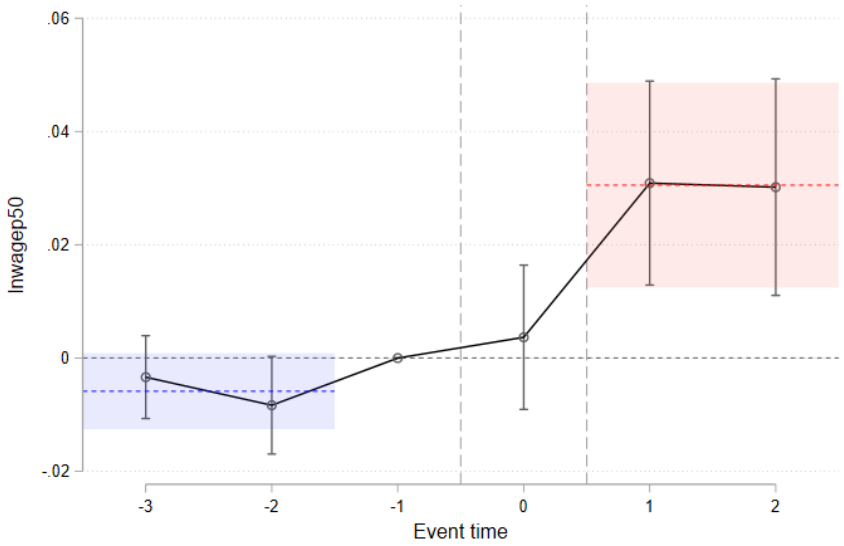
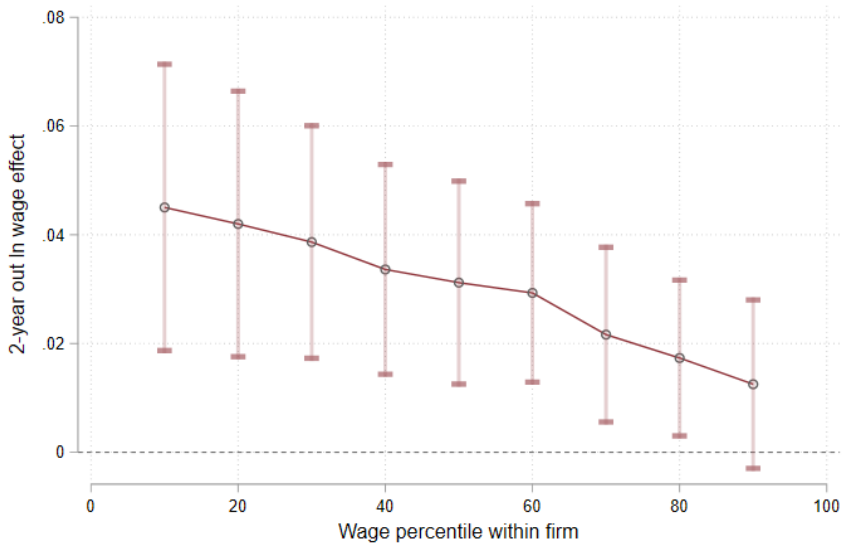
Direct wage effects on bargaining council firms



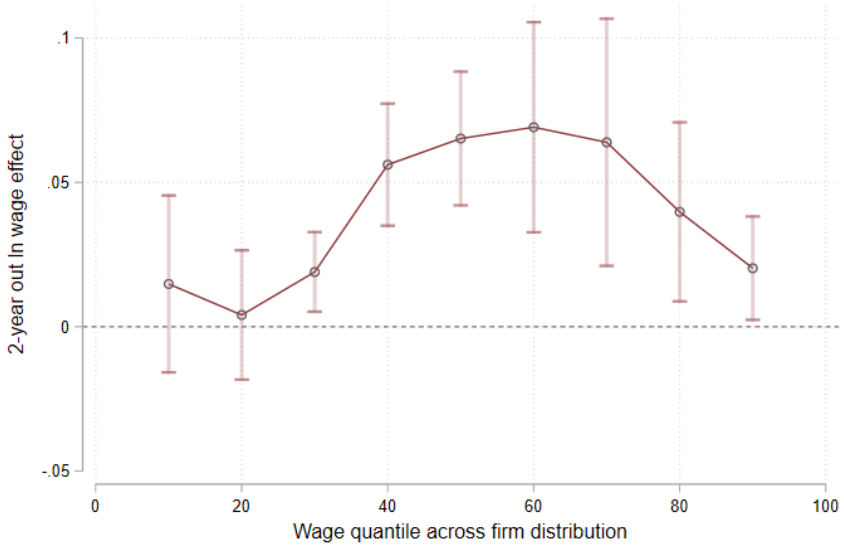
(a) Median wage of firms



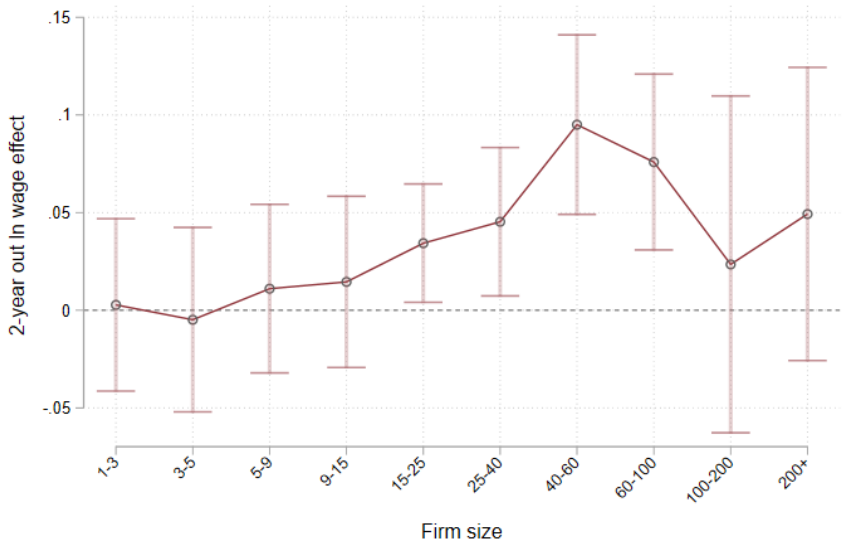
(b) Post period effect, within-firm quantiles

Effects when including spillover in control are 0.5% lower (see here)

Distributional wage effects on bargaining council firms

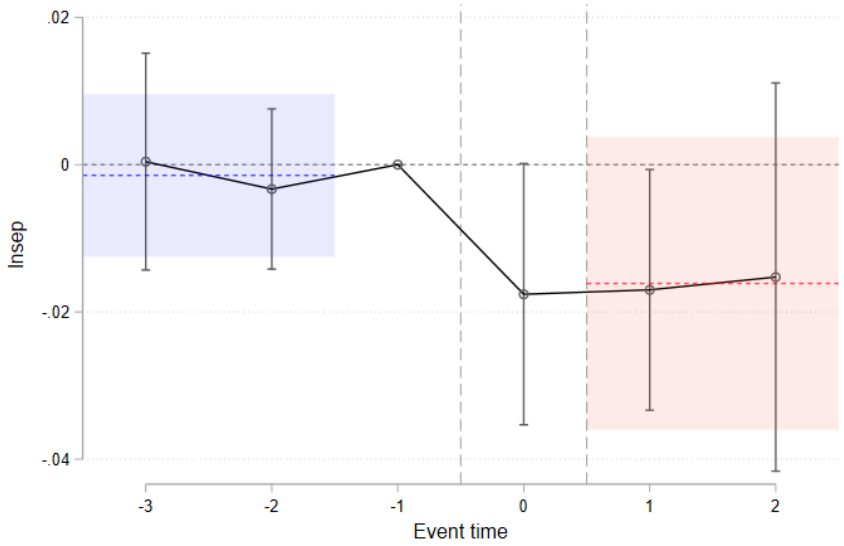


(a) Across firm wage quantiles

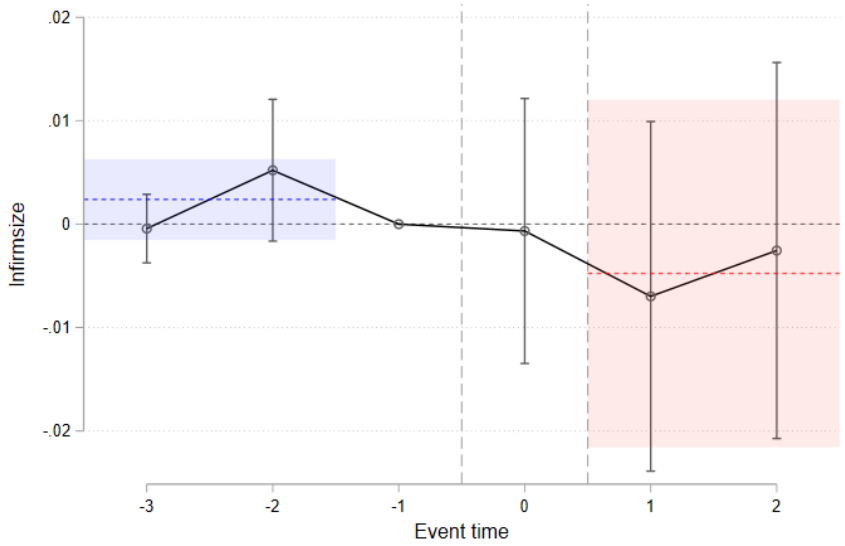


(b) Across firm size

Flow effects on bargaining council firms



(a) Separations



(b) Firm size

Effects on VA and profit per worker here

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Empirical design for spillover firms

- Very similar to main specification

$$y_{j,t} = \sum_{t=-3}^{-2} \delta_t(\tau_t \times flow_{j(c)}) + \sum_{t=0}^{2} \delta_t(\tau_t \times flow_{j(c)}) + \phi_j + \theta_{event \times loc. \times t} + \gamma_{firmsize \times t} + \beta_{\Delta lnfirmsize_{t<-1} \times t} + \psi_{\Delta lnwage_{t<-1} \times t} + e_{j,t}$$

- Compares firms with high flows to firms with low flows that are otherwise similar (within the same location, of similar firm size, and wage/employment growth, netting out level firm differences).
- Exclude firms in same industry as bargaining council (avoid measurement error), or control firms w/ high flows to other bargaining councils

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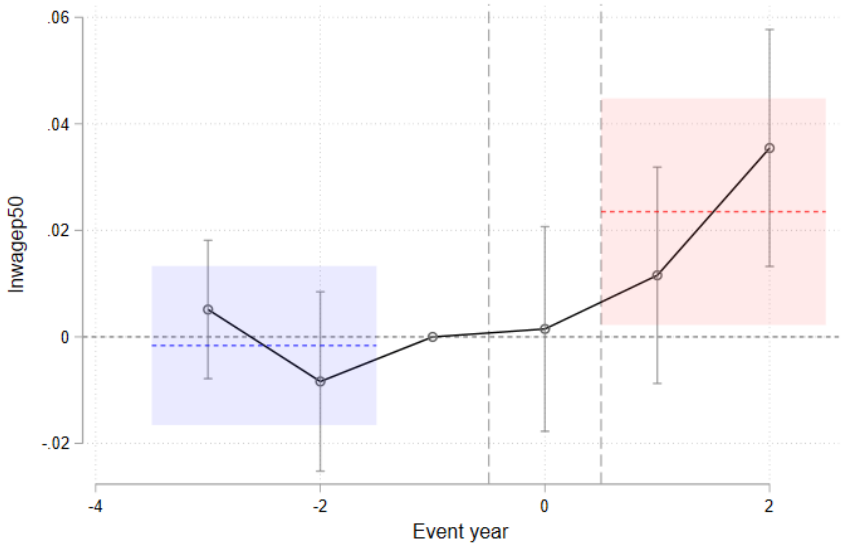
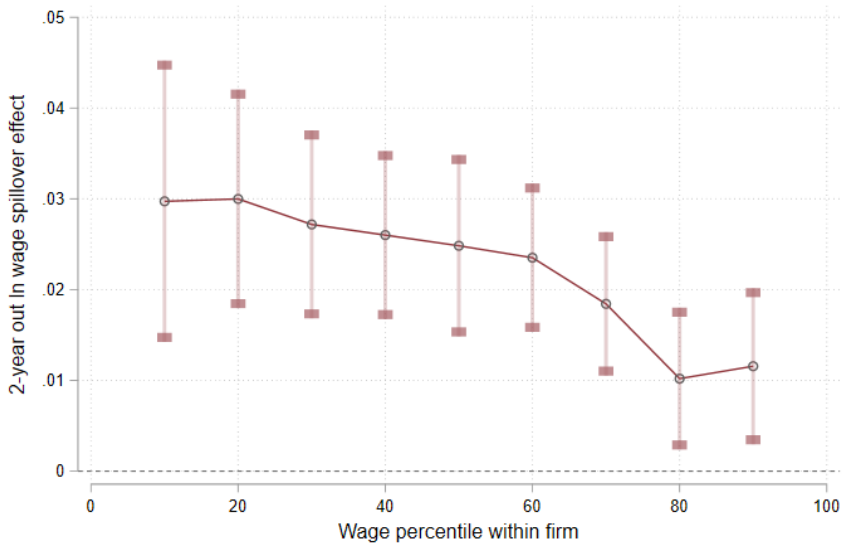
Income location of spillover firms

More on spillover characteristics: Connectivity by size and geography

Wage effect on spillover firms

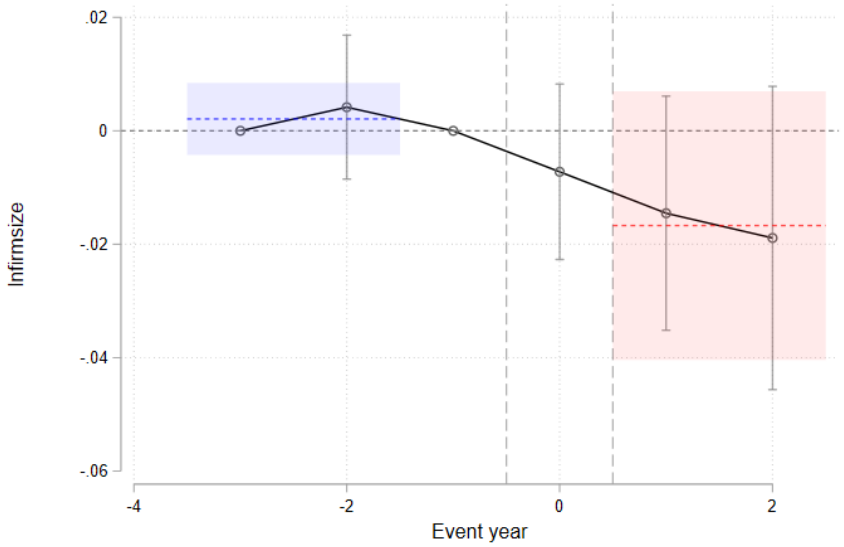


(a) Median wage of firms

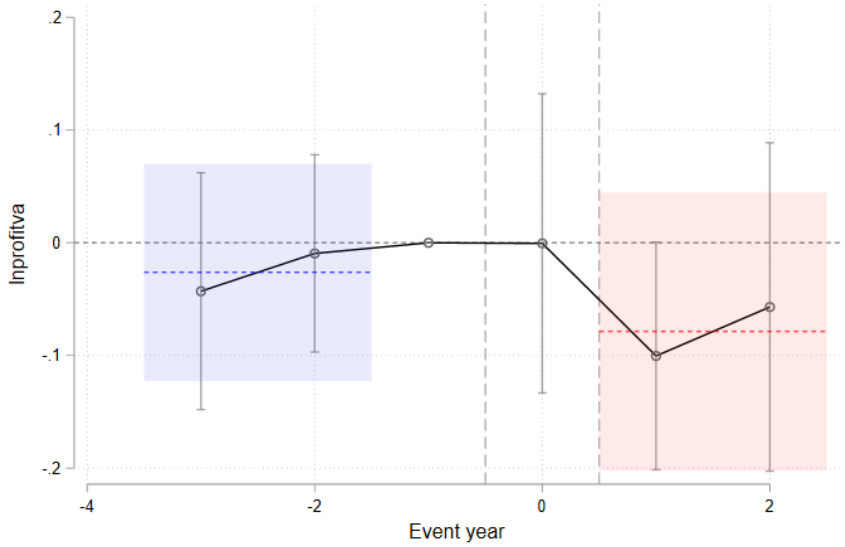


(b) Post effect, within-firm quantiles

Size effects on spillover firms



(a) Firm size



(b) Profit margin per worker

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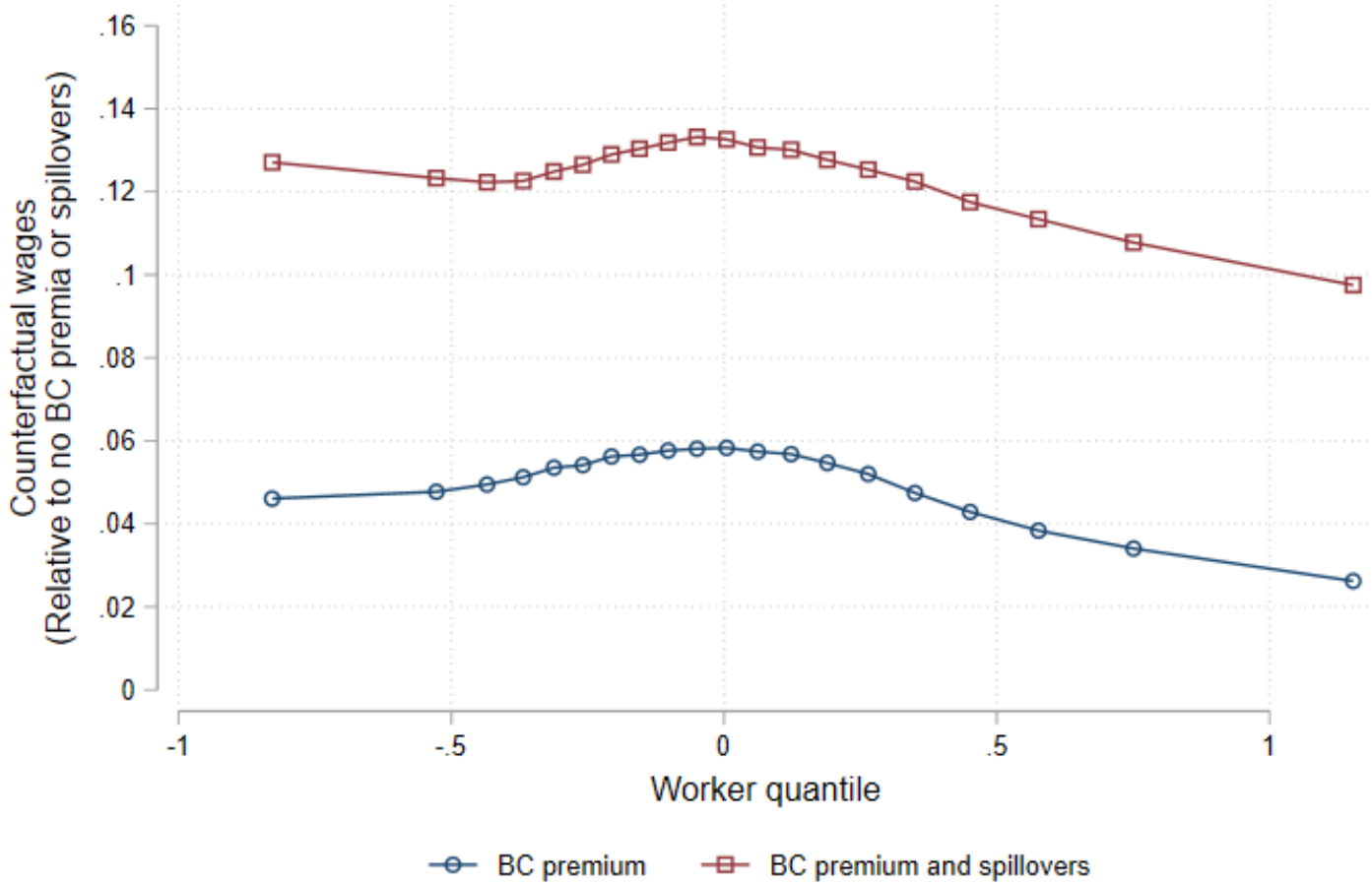
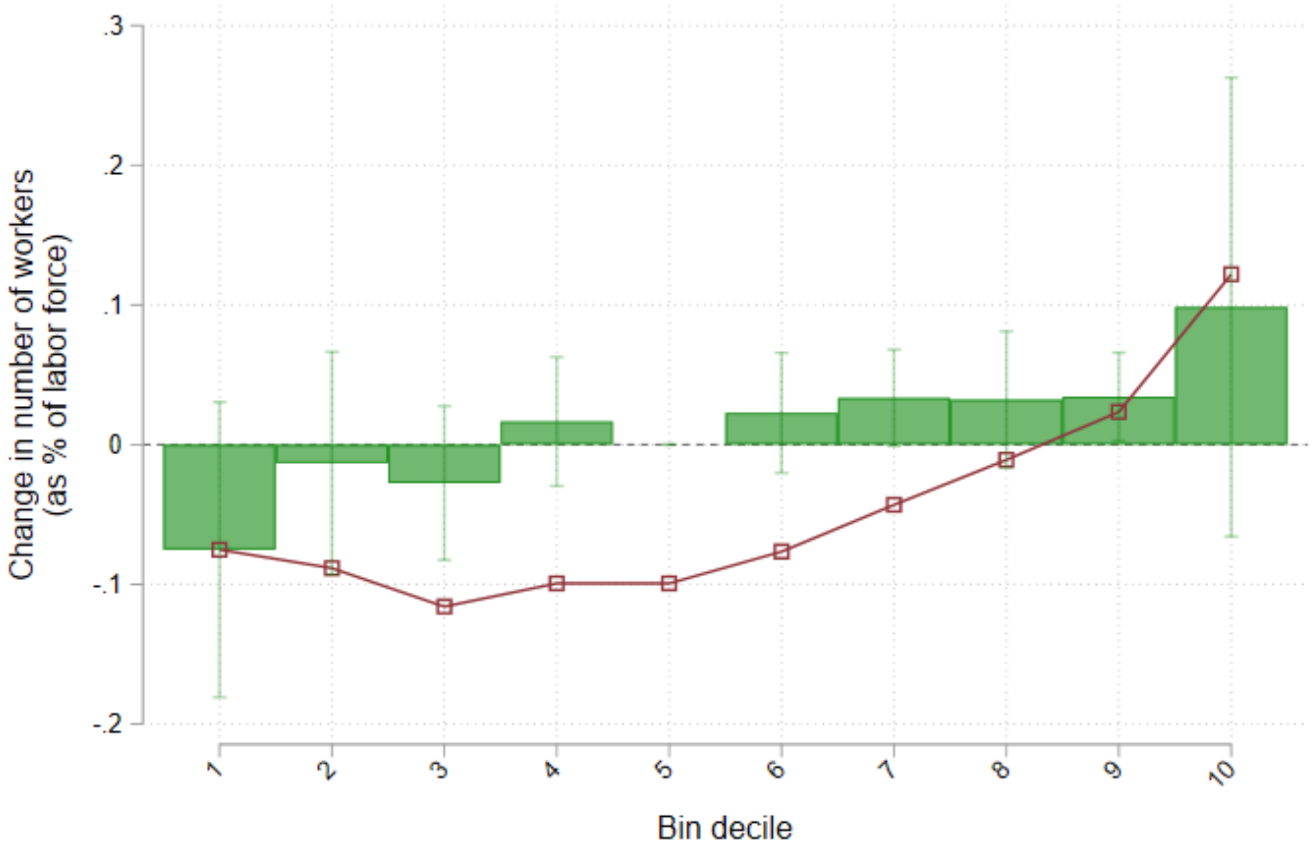
Aggregate effects on the labor market



Discussion of aggregate effects, re-allocation and heterogeneity

Re-allocation across bargaining council firms



See re-allocation by wage

Robustness and heterogeneity

- Robustness table here, with similar results when
  - Controlling for pre-trends or prior large contracted wage increases
  - Weighting by size of firms or propensity score (instead of controlling for growth)
  - Restricting to national wage increases (less endogeneity to local firms)
- Heterogeneity table here
  - AKM firm effects: Consistent with re-allocation, similar for spillover firms
  - Kaitz index: As expected, firms with low min wage relative to the median local wage have more muted effects. For high min wage, wage effects are much larger, but so are the decreases in firm size. Bargaining council firms decrease profits.

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Conclusion

- Large wage effects of contracts on bargaining council firms
  - No average firm size effect, but evidence of re-allocation
- Cross wage spillover elasticity of 0.8
  - Theoretically and empirically link spillovers to mechanism of worker flows → Leverage data to get precise local effects
  - Decrease in profits
- Overall large effect on labor market structure, such that spillovers double the direct effect of contracted wage increases.
  - This study focuses on the spillover mechanism of worker flows connecting firms, but several complementary mechanisms such as norms of fairness, or union threat effects.

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Institutional structure of the South African labor market

1. Generally low wage and poor conditions for Informal workers (≈30%), generally, formal sector uncovered workers (≈15%), and formal sector sectoral determinations (≈10%, low wage)
2. Formal sector and only unionized (≈15%, workplace bargaining)
3. Formal sector and bargaining council (≈30%, industry×location bargaining with extended coverage, ∼3 year contracts)

- SA literature finds 25-30% union premium (Kerr and Wittenberg 2021)
- Magruder 2012 finds bargaining councils have negative employment effects on small firms → consistent with re-allocation (see later)

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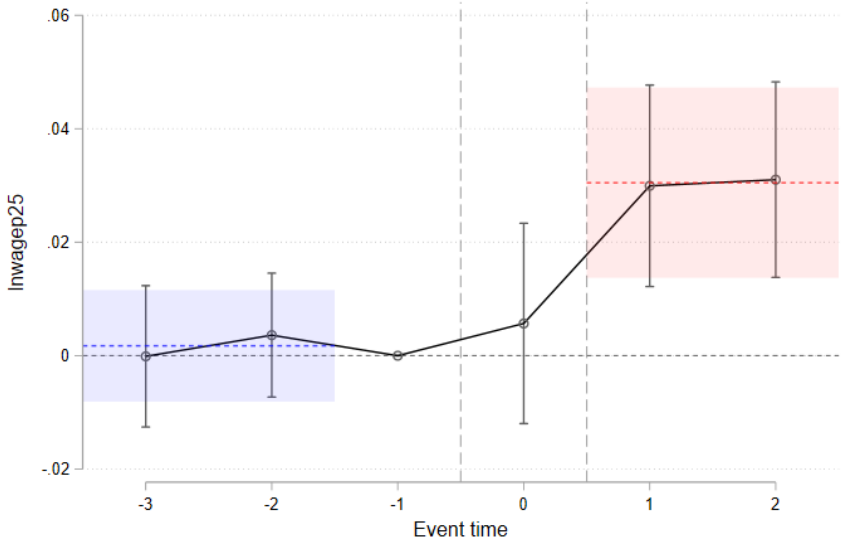
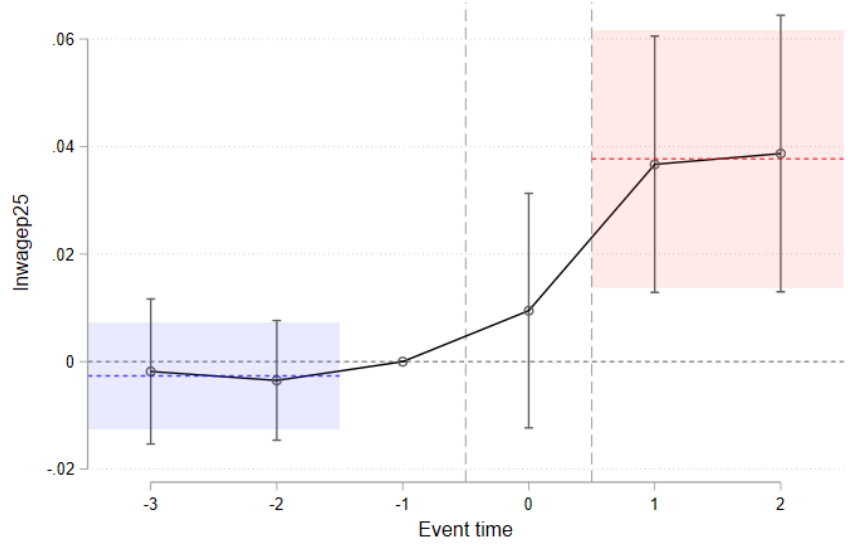
Back to context.

Other effects on bargaining council firms



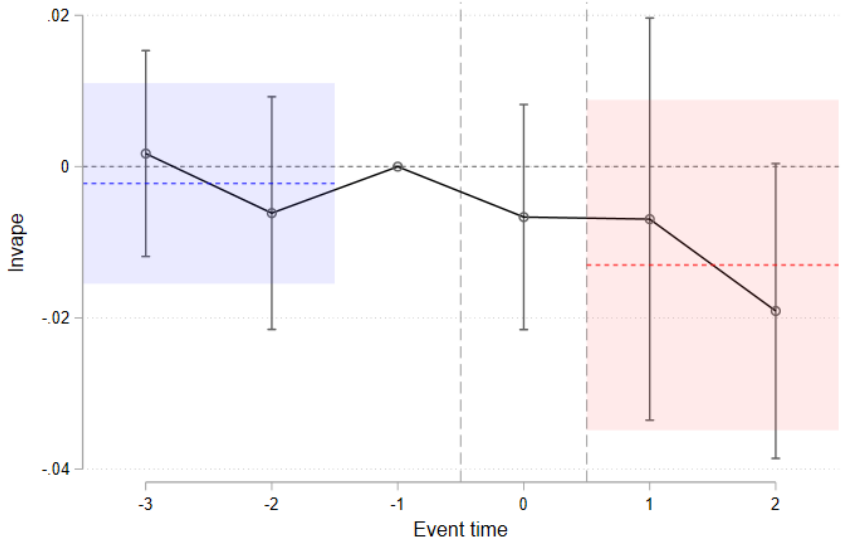
(a) Including spillover in control



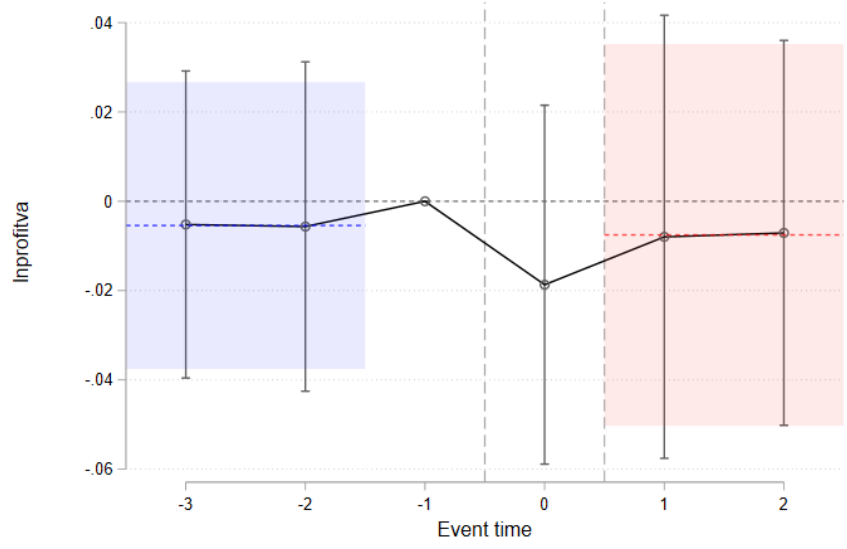
(b) Excluding spillover from control

Back to bargaining council effects

Other effects on bargaining council firms



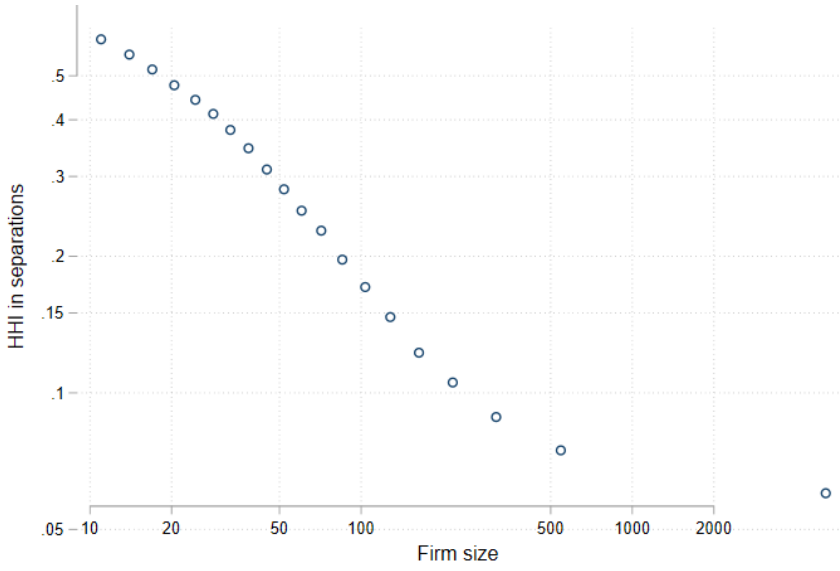
(a) Value added per worker



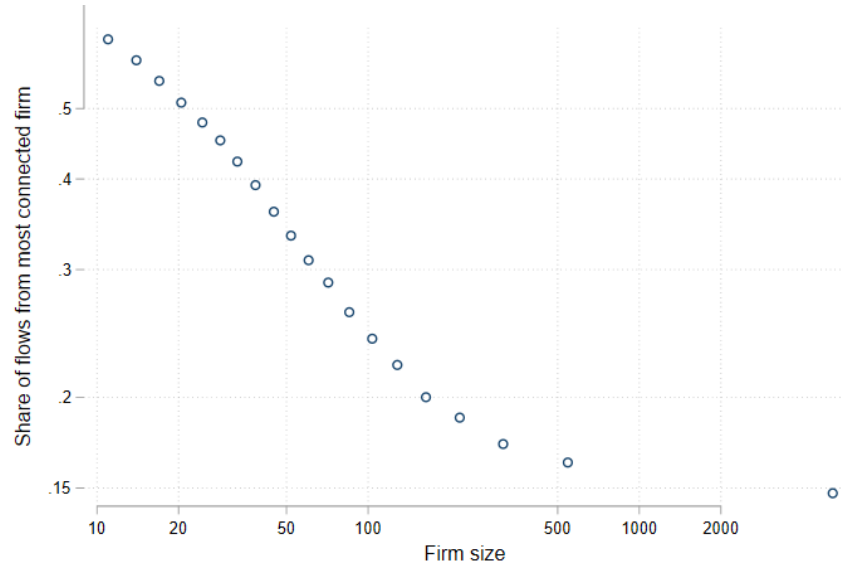
(b) Profit margin per worker

Back to bargaining council effects

Connectivity by firm size



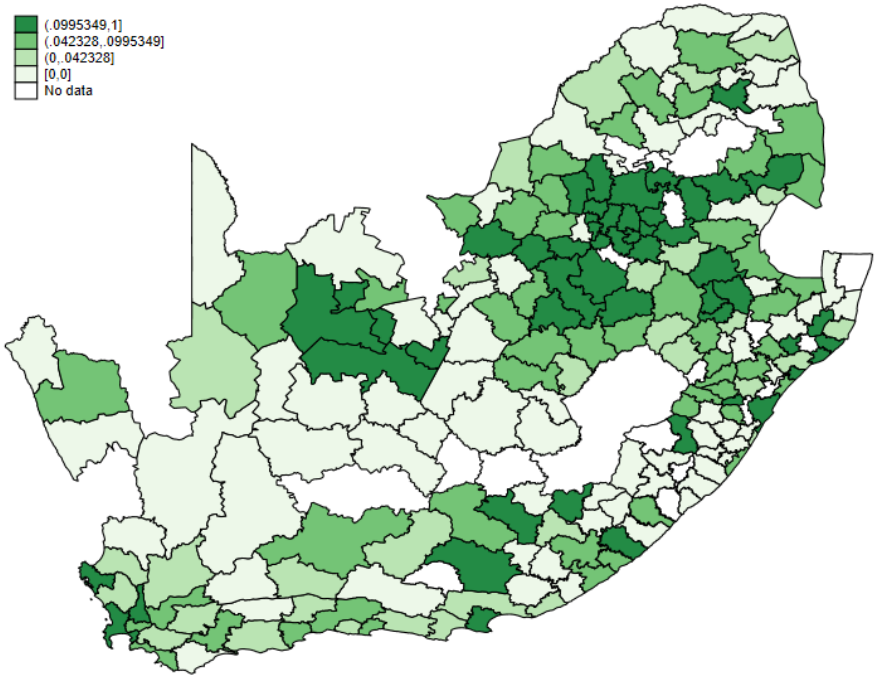
(a) HHI



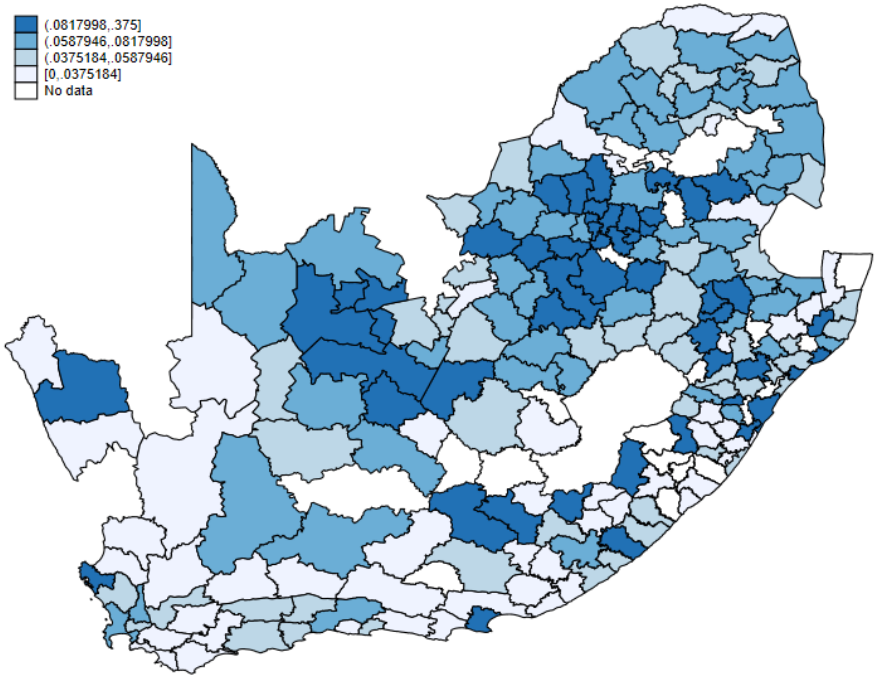
(b) Max share

Back to spillover effects

Geographic location of spillover firms



(a) Bargaining council firms



(b) Spillover firms

Back to spillover effects

Re-allocation in bargaining council firms: By firm wage

Back to main specification

Robustness

	(1) main	(2) pretrendFE	(3) nopreBC	(4) sizewgt	(5) pwgt	(6) nation
lnwagep50	0.030	0.025	0.034	0.040	0.061	0.046
	(0.010)	(0.012)	(0.014)	(0.016)	(0.011)	(0.010)
lnfirmsize	–0.003	–0.003	–0.004	–0.050	–0.034	–0.011
	(0.009)	(0.010)	(0.012)	(0.058)	(0.010)	(0.010)
lnsep	–0.015	–0.015	–0.011	–0.021	–0.032	–0.037
	(0.013)	(0.022)	(0.020)	(0.021)	(0.014)	(0.015)
lnprofitva	–0.007	–0.015	–0.017	0.111	–0.066	–0.022
	(0.022)	(0.040)	(0.020)	(0.080)	(0.027)	(0.028)
lnwagep50	0.025	0.024	0.016	0.081	0.011	0.024
	(0.005)	(0.005)	(0.006)	(0.029)	(0.010)	(0.005)
lnfirmsize	–0.006	–0.006	–0.002	–0.045	–0.019	–0.006
	(0.006)	(0.006)	(0.007)	(0.056)	(0.011)	(0.006)
lnsep	–0.009	–0.004	–0.010	–0.012	0.001	–0.006
	(0.009)	(0.009)	(0.012)	(0.027)	(0.021)	(0.009)
lnprofitva	–0.061	–0.050	–0.078	0.168	–0.121	–0.057
CWE	0.817	0.941	0.467	2.014	.	0.528

Back to discussion

Heterogeneity

	(1) ffeq0	(2) ffeq1	(3) kaitz0	(4) kaitz1	(5) lseq0	(6) lseq1	(7) fem0	(8) fem1
lnwagep50	0.036	0.017	0.027	0.085	0.018	0.040	0.014	0.032
	(0.014)	(0.008)	(0.011)	(0.024)	(0.013)	(0.013)	(0.012)	(0.014)
lnfirmsize	–0.025	0.029	0.008	–0.083	0.003	–0.006	0.013	0.039
	(0.011)	(0.010)	(0.010)	(0.025)	(0.012)	(0.013)	(0.015)	(0.022)
lnsep	0.009	–0.037	–0.029	–0.034	0.004	–0.029	0.003	0.008
	(0.014)	(0.018)	(0.019)	(0.019)	(0.013)	(0.018)	(0.012)	(0.013)
lnprofitva	–0.019	0.010	0.013	–0.070	–0.008	–0.006	.	.
	(0.032)	(0.034)	(0.041)	(0.028)	(0.043)	(0.024)	(.)	(.)
lnwagep50	0.045	0.010	0.015	0.064	0.047	0.018	0.022	0.026
	(0.007)	(0.007)	(0.008)	(0.009)	(0.010)	(0.006)	(0.006)	(0.006)
lnfirmsize	–0.024	0.020	–0.001	–0.032	–0.014	–0.003	0.006	0.008
	(0.008)	(0.008)	(0.009)	(0.011)	(0.012)	(0.007)	(0.007)	(0.007)
lnsep	–0.011	–0.007	–0.015	–0.013	–0.010	–0.008	0.006	0.037
	(0.012)	(0.012)	(0.013)	(0.016)	(0.012)	(0.012)	(0.012)	(0.013)
lnprofitva	–0.069	–0.050	–0.043	–0.037	–0.033	–0.071	.	.
	(0.035)	(0.029)	(0.031)	(0.044)	(0.040)	(0.026)	(.)	(.)
CWE	1.253	.	0.537	0.752	2.555	0.451	1.585	0.812

Back to discussion