

The 2019 Increase in the Greek Minimum Wage: Evidence on Wages, Employment, and Worker Reallocation

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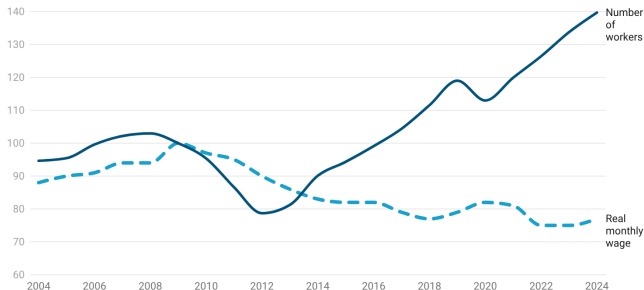
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Hellenic Policy Papers, June 2026

Introduction

- ▶ After 2013, private-sector employment recovered strongly but real wages remained well below pre-crisis levels
 - ▶ Source: EFKA monthly bulletins

Private-sector salaried employment, 2009=100



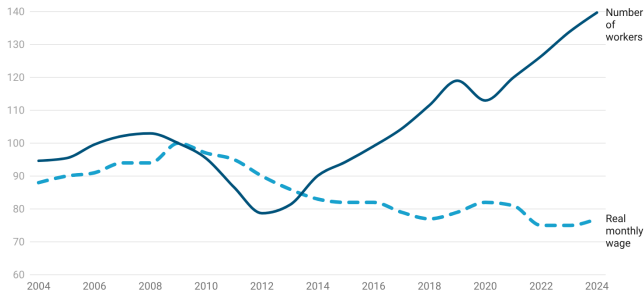
Source: EFKA • Created with Datawrapper

- ▶ Policy challenge: promote *sustainable* wage growth

Introduction

- ▶ After 2013, private-sector employment recovered strongly but real wages remained well below pre-crisis levels
 - ▶ Source: EFKA monthly bulletins, **GREECE IN NUMBERS**

Private-sector salaried employment, 2009=100



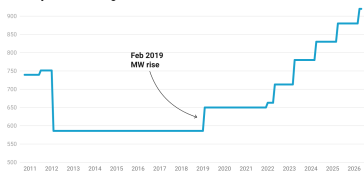
Source: EFKA • Created with Datawrapper

- ▶ Policy challenge: promote *sustainable* wage growth

Policy context

- ▶ 2011-2012: radical liberalization of wage-setting
 - ▶ Minimum Wage reduced by 22% to €586 per month
 - ▶ collective bargaining coverage declined sharply

Monthly minimum wage



Source: Ministry of Labor • Created with Datawrapper

Monthly minimum wage in constant prices (2020)



Source: Ministry of Labor • Created with Datawrapper

- ▶ Since 2019: partial reversal
 - ▶ **Feb 2019: 11% rise in the minimum wage to €650**
 - ▶ 2022-26: successive rises in the minimum wage to €920
 - ▶ 2026: collective bargaining agreements reintroduced
- ▶ Focus: minimum wage. Policy tool under direct gov't control

What can a higher Minimum Wage do?

- ▶ **Economic Theory.** Potential effects of minimum wage
 1. **Wages:** raise pay for low-earners and *spillover*
 2. **Employment:** destroy low-paid jobs
 - ▶ Unemployment rate in Feb 2019 = 19%
 3. **Productivity:** improve firm mix in economy
 - ▶ Reallocate economic activity towards high-pay, high-productivity firms (evidence from Germany)
- ▶ This study: evaluate effects of 2019 rise in MW
- ▶ Why 2019? Mostly technical reasons
 - ▶ First rise under liberalized system
 - ▶ Quantitative large rise
 - ▶ Pandemic hinders evaluation of post-2020 rises

Summary of findings

1. **Wages:**

- ▶ Directly affected workers: + 7.2%
- ▶ Indirectly affected (spillovers): + 3.1%
 - ▶ For workers earning €650-€1,300. Mean wage $\approx$ €1,200
- ▶ Effect on average wage: + 1.8%, one-third due to spillovers

2. **Employment:** no detectable effect

3. **Reallocation:** no detectable effect

- ▶ The 2019 increase raised wages substantially without measurable employment losses

THE DATA

Data Sources

1. Administrative data from **Social Security System** (EFKA)

- ▶ Universe of monthly “detailed periodic declarations”
- ▶ Compensation, days of work, worker/firm characteristics
- ▶ 2015-2020, 12% random sample

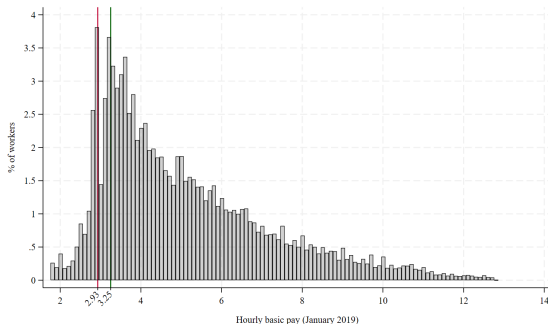
2. **Labor Force Survey**

- ▶ Used to impute hours of work
- ▶ Approx. 5 million worker-month observations

Hourly wages

- ▶ Construct hourly wages using
 - ▶ Monthly compensation and days of work from EFKA
 - ▶ Hours of work from LFS

Figure: Distribution of hourly wages in January 2019



Summary statistics and minimum wage bite

Table: Distribution of workers relative to MW in January 2019

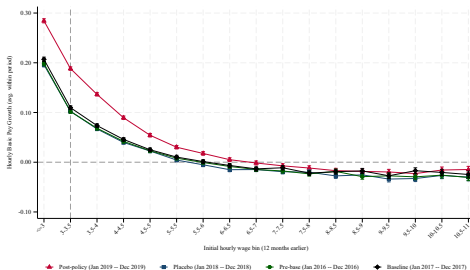
	Coverage	Up to new MW
Total sample	0.099	0.193
Female	0.094	0.203
Male	0.103	0.184
16-24 years old	0.327	0.486
25-44 years old	0.094	0.198
45-64 years old	0.066	0.130
Part-time workers	0.152	0.256
Full-time workers	0.069	0.158
Low-skilled occupation	0.117	0.194
Medium-skilled occupation	0.093	0.199
Highly-skilled occupation	0.107	0.172
Attica region	0.091	0.171
Thessaloniki region	0.089	0.190
Rest of Greece	0.117	0.233

EFFECT ON WAGES

Annual growth by hourly wage bin specification

- ▶ Group workers in hourly wage bins
- ▶ Plot year-on-year wage growth for each wage bin by year

Figure: Annual growth in hourly wages



- ▶ All years: **low-wage workers** experience higher wage growth
 - ▶ DO NOT attribute all wage growth to Minimum Wage rise
- ▶ **Post-policy year**: wage growth rises only for **low-wage workers**
 - ▶ Excess growth potentially due to MW rise

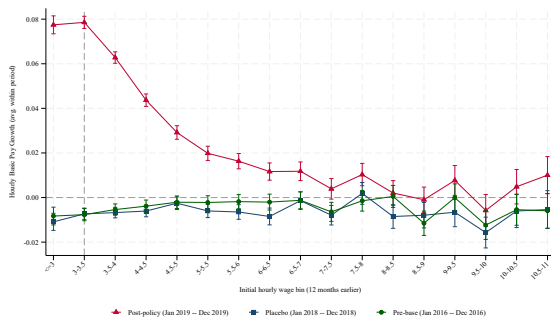
Annual growth in hourly wages

specification

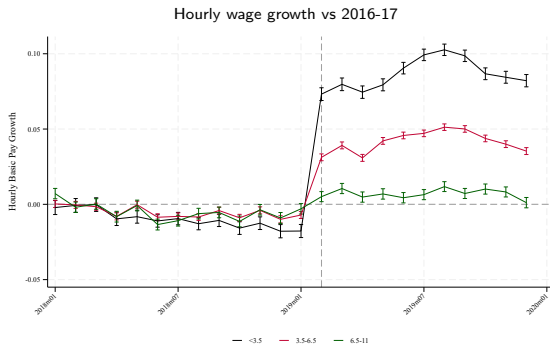
tables

- ▶ Subtract growth of 2016-17 from other years
 1. **Treated group:** less than 3.50 euros/hour
 2. **Spillover group:** 3.50-6.50 euros/hour
 3. **Control group:** more than 6.50 euros/hour

Figure: Annual growth vs 2016-17

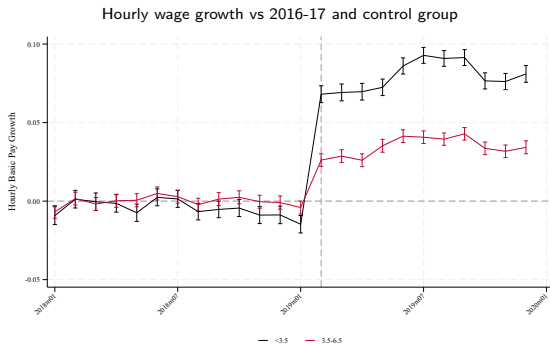


Hourly wage growth over time

[specification](#)[tables](#)[daily wages](#)

- Plot wage growth for **treated**, **spillover**, **control**
 - subtracting growth of 2016-17

Hourly wage growth over time

[specification](#)[tables](#)[daily wages](#)

- ▶ Plot wage growth for **treated**, **spillover**, **control**
 - ▶ subtracting growth of 2016-17 and *control group*
- ▶ Subtract growth of **control group** to **remove macro trends**
 - ▶ Hourly wage of **treated group**: + 7.2%
 - ▶ Hourly wage of **spillover group**: + 3.1%

Summary of effect on wages

- ▶ Main effects
 - ▶ Workers earning below MW saw gains of 7.2%
 - ▶ Workers earning €650-€1,300 saw gains of 3.1%
 - ▶ The average wage rose by 1.8%. One-third due to spillovers
- ▶ The analysis controls for
 - ▶ Different growth patterns across the wage distribution
 - ▶ Macroeconomic trends
- ▶ Strong effects and strong spillovers

EFFECT ON EMPLOYMENT

Worker-level employment comparisons are inconclusive

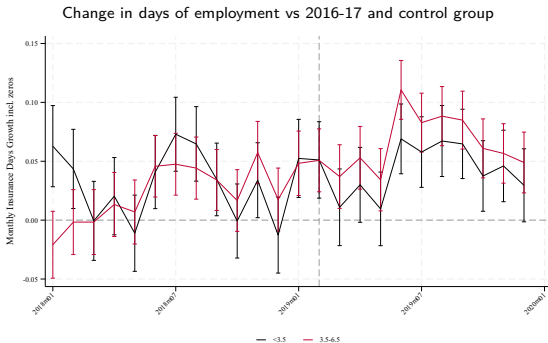
- ▶ Compute **change in days employed**, three groups

- ▶ No evidence of deterioration after MW rise [table](#)

[probability of remaining employed](#)

[days if remained employed](#)

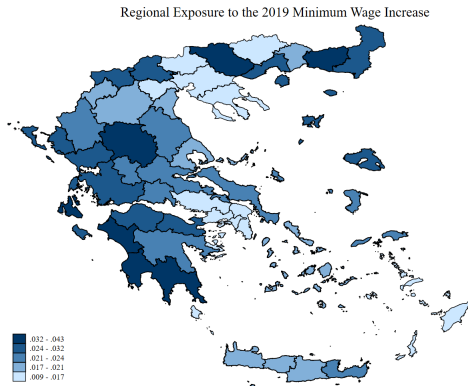
[PT to FT transition](#)



- ▶ **Pre-policy**: higher growth for **low-wage** groups than **control**
 - ▶ Subtracting control group does not remove employment trend
 - ▶ Q: did the rise in MW **lower the employment trend**?

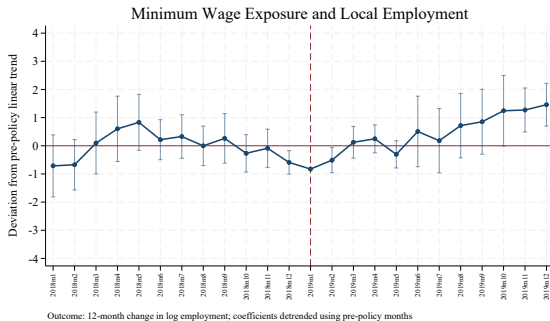
Regional approach

- ▶ Compute exposure to MW rise in 74 prefectures: if new MW satisfied, how much does average rise? definition
- ▶ Does employment growth **slow down** in **exposed prefectures**?
E.g. SW Peloponnese 3 times more exposed than Attica



Employment effects

- ▶ Estimates centered on pre-policy trends estimation
 - ▶ Control for pre-policy trends at the prefecture level
- ▶ **Do not detect negative employment effects** after MW rise



Summary of effects on employment

- ▶ Overall, do not detect any negative effects on employment
- ▶ Notable result
 - ▶ Unemployment rate of 19% (!) when rise implemented
 - ▶ Rise in MW was significant
 - ▶ Share of affected workers was substantial
- ▶ Possible interpretations
 - ▶ Strong labor demand recovery
 - ▶ Substantial wage markdowns during crisis
 - ▶ Formalization of previously unreported earnings
 - ▶ Hard to detect with administrative data
 - ▶ But: MW rise still means higher labor costs due to taxes, social security contributions

EFFECT ON REALLOCATION

The effect of the MW on worker allocation across firms

- ▶ Argument for higher minimum wages: improve productivity by reallocating employment toward better firms
 - ▶ Rise in MW affects low-pay jobs
 - ▶ Low-prod. firms: mostly low-pay jobs, reduce employment
 - ▶ High-prod. firms: mostly high-pay jobs, raise employment
 - ▶ Strong evidence this happened in Germany in 2015
- ▶ We test this reallocation effect directly
- ▶ Focus on
 - ▶ Reallocation of workers to higher-wage firms
 - ▶ Reallocation of workers to larger firms

Reallocation

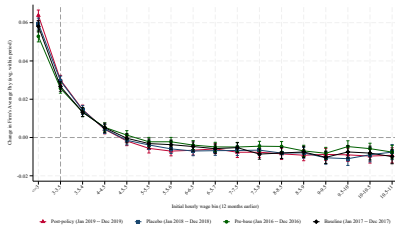
- ▶ When workers reallocate, do they move to firms that
 - ▶ Pay higher wages?
 - ▶ Are larger?
- ▶ No evidence that pattern of reallocation changed in 2019

prob. switch firms

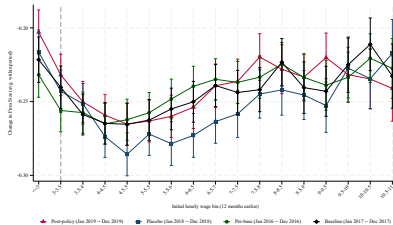
firm wage

firm size

Change in average firm wage



Change in firm size



Summary of reallocation effects

- ▶ No evidence of productivity-enhancing reallocation driven by rise in minimum wage
 - ▶ Contrast with evidence from Germany and other countries
- ▶ Possible reasons:
 - ▶ One year might be a short horizon to detect reallocation effects
 - ▶ A lot of labor market slack in 2019

Main findings

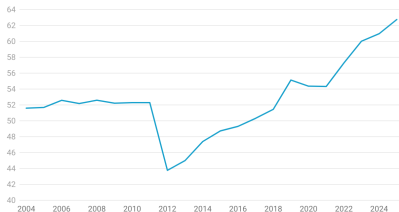
- ▶ The 2019 MW increase raised wages substantially:
 - ▶ Directly affected workers: **+7.2%**
 - ▶ Spillovers: **+3.1%** for wages up to $1,300 = 2 \times \text{MW}$
 - ▶ Average wage: **+ 1.8%**, one-third due to spillovers
- ▶ **No evidence of adverse employment effects:**
 - ▶ Unchanged employment retention and days worked
 - ▶ Employment growth not affected in more exposed regions
- ▶ Little evidence that the reform altered worker mobility or induced reallocation across firms.
- ▶ **Main takeaway:** reform raised earnings throughout the lower part of the wage distribution, primarily through rapid wage adjustments within existing employment relationships

What about 2022-2026 and beyond?

- ▶ What is effect of 2022-26 rises on wages and employment?
 - ▶ Cannot simply project our 2019 findings to 2022-26: different unemployment rate, wages, macro conditions...
- ▶ Reasons for caution
 - ▶ MW is very high compared to average wage (Kaitz index = 63)
 - ▶ Considerable wage compression at bottom of distribution
 - ▶ Less space to raise wages absent strong productivity growth

Kaitz index

Minimum wage as share of mean wage



Source: EFKA, Ministry of Labor • Created with Datawrapper

APPENDIX

Outcome growth by wage bin [back](#)

- ▶ y_{it} = outcome (wage, employment...), worker i , month t
 - ▶ Month t = calendar month $M(t)$, calendar year $S(t)$
 - ▶ Place worker i in bin $b(it)$ according to wage in $t - 12$
- ▶ For workers in each wage bin:
 - ▶ Compute average growth in y between $t - 12$ and t ,
 - ▶ for each calendar month m and calendar year s ,
 - ▶ controlling for gender, age, citizenship, FT/PT status, occupation, sector, NUTS 2, establishment size

$$\Delta_{12}y_{it} = \sum_{k,m,s} \mathbf{1}_{b(it)=k} \times \mathbf{1}_{M(t)=m} \times \mathbf{1}_{S(t)=s} \times \gamma_{k,s,m} + \beta X_{i,t-12} + e_{it}$$

- ▶ Year-on-year growth of y for wage bin k
 - ▶ for month m , year s : $\gamma_{k,s,m}$
 - ▶ for full year s : average $\gamma_{k,s,m}$ across all months of year s

Outcome growth by wage bin relative to base year [back](#)

- ▶ y_{it} = outcome (wage, employment...), worker i , month t
 - ▶ Month t = calendar month $M(t)$, calendar year $S(t)$
 - ▶ Place worker i in bin $b(it)$ according to wage in $t - 12$
- ▶ For workers in each wage bin:
 - ▶ Compute average growth in y between $t - 12$ and t ,
 - ▶ for each calendar month m and calendar year $s = \{b, c\}$
 - ▶ Calendar years are base year b or comparison years c
 - ▶ controlling for gender, age, citizenship, FT/PT status, occupation, sector, NUTS 2, establishment size

$$\Delta_{12}y_{it} = \sum_{k,m,s} \mathbf{1}_{b(it)=k} \times \mathbf{1}_{M(t)=m} \left(\gamma_{k,b,m} + \mathbf{1}_{S(t)=c} \times \delta_{k,c,m} \right) + \beta X_{i,t-12} + e_{it}$$

- ▶ Year-on-year growth of y for wage bin k relative to base year
 - ▶ for month m , year c : $\delta_{k,c,m}$
 - ▶ for full year c : average $\delta_{k,c,m}$ across all months of year c

Event study of outcome growth [back](#)

- ▶ Allocate each worker in bin *treated*, *spillover* or *control*
- ▶ For workers in each wage bin
 - ▶ Compute average outcome growth for each month
 - ▶ relative to base year
 - ▶ controlling for bin-specific seasonality

$$\Delta_{12}y_{it} = \sum_{k,m} \mathbf{1}_{b(it)=k} \times \mathbf{1}_{M(t)=m} \left(\alpha_{k,m} + \sum_s \left(\gamma_{k,b,m} + \mathbf{1}_{S(t)=c} \times \gamma_{k,c,m} \right) \right) \\ + \beta X_{i,t-12} + e_{it}$$

Event study of outcome growth [back](#)

- ▶ Allocate each worker in bin *treated*, *spillover* or *control*
- ▶ For workers in each wage bin
 - ▶ Compute average outcome growth for each month
 - ▶ relative to base year and control wage bin (K)
 - ▶ controlling for bin-specific seasonality

$$\begin{aligned} \Delta_{12}Y_{it} = & \sum_{k,m} \mathbf{1}_{b(it)=k} \times \mathbf{1}_{M(t)=m} \left(\alpha_{k,m} + \right. \\ & \left. + \sum_s \left(\gamma_{k,b,m} + \mathbf{1}_{S(t)=c,k=K} \times \gamma_{K,c,m} + \mathbf{1}_{S(t)=c,k < K} \times \delta_{k,c,m} \right) \right) + \beta X_{i,t-12} + e_{it} \end{aligned}$$

Annual growth in hourly wages [back](#)

- ▶ Average growth in hourly wage for each group,
- ▶ net of the rise during the baseline year 2017-18

	Treated (≤ 3.5)	Spillover (3.50, 6.50)	Control (≥ 6.50)
Post-policy (Feb '19–Jan '20)	0.078*** (0.001)	0.037*** (0.001)	0.006*** (0.001)
Placebo (Feb '18–Jan '19)	−0.009*** (0.001)	−0.005*** (0.001)	−0.005*** (0.001)
Baseline (Feb '17–Jan '18)	0.140*** (0.002)	0.021*** (0.002)	−0.024*** (0.002)
R^2	0.130	0.130	0.130
Observations	4,843,898	4,843,898	4,843,898

Annual growth in hourly wages [back](#)

- ▶ Average growth in hourly for each group
- ▶ net of the rise during the baseline year 2017-18
- ▶ net of the rise to the control group

	Treated (≤ 3.50)	Spillover (3.50, 6.50)
Post-policy (Feb '19–Jan '20)	0.072*** (0.002)	0.031*** (0.001)
Placebo (Feb '18–Jan '19)	−0.004** (0.002)	0.000 (0.001)
Baseline (Feb '17–Jan '18)	0.140*** (0.002)	0.021*** (0.002)
R^2	0.130	0.130
Observations	4,843,898	4,843,898

- ▶ Daily wages follow similar pattern as hourly wages
- ▶ Daily wage of treated group: +7.8%
- ▶ Daily wage of spillover group: +3.5%
 - ▶ Wage growth in placebo year is close to zero

	Treated	Spillover	Control	Treated	Spillover
Post-policy (Feb '19–Jan '20)	0.091*** (0.001)	0.047*** (0.001)	0.012*** (0.001)	0.078*** (0.002)	0.035*** (0.001)
Placebo (Feb '18–Jan '19)	0.004*** (0.001)	0.005*** (0.001)	0.002** (0.001)	0.002 (0.002)	0.004*** (0.001)
Baseline (Feb '17–Jan '18)	0.104*** (0.002)	0.021*** (0.002)	-0.010*** (0.002)	0.104*** (0.002)	0.021*** (0.002)
R^2	0.114	0.114	0.114	0.114	0.114
Observations	4,843,898	4,843,898	4,843,898	4,843,898	4,843,898

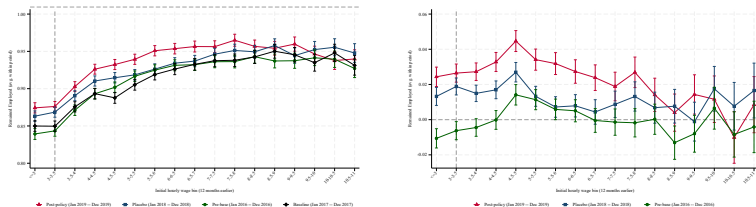
Annual growth in days employed [back](#)

- ▶ Positive estimates post-policy
- ▶ Positive trends in placebo year

	Treated	Spillover	Control	Treated	Spillover
Post-policy (Feb '19–Jan '20)	0.108*** (0.007)	0.127*** (0.005)	0.064*** (0.007)	0.044*** (0.010)	0.063*** (0.009)
Placebo (Feb '18–Jan '19)	0.067*** (0.007)	0.059*** (0.005)	0.038*** (0.007)	0.029*** (0.010)	0.022*** (0.008)
Baseline (Feb '17–Jan '18)	-0.207*** (0.012)	-0.478*** (0.011)	-0.314*** (0.012)	-0.624*** (0.012)	-0.478*** (0.011)
R^2	0.207	0.207	0.207	0.207	0.207
Observations	6,081,060	6,081,060	6,081,060	6,081,060	6,081,060

Probability of remaining employed [back](#)

Figure: Year-on-year probability of remaining employed



- ▶ Low-wage workers are less likely to remain employed
- ▶ Upward trend over time: macroeconomic improvement
- ▶ No evidence of negative effect [event study](#)

Event study: remaining employed

[back](#)

Figure: Year-on-year probability of remaining employed

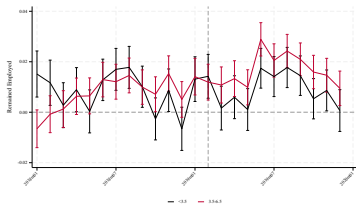
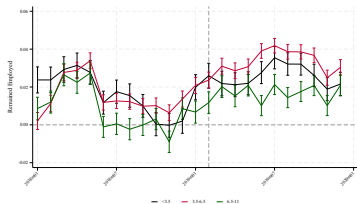
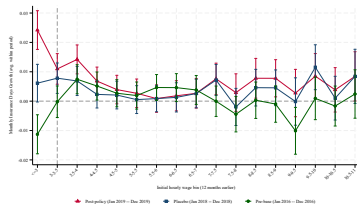
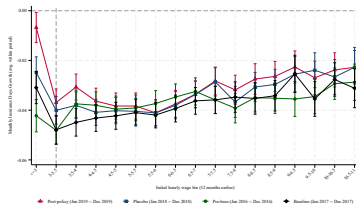


Figure: Days of employment, if remain employed

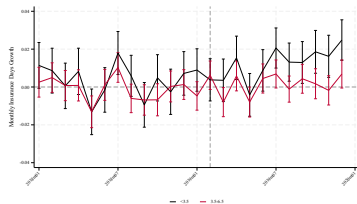
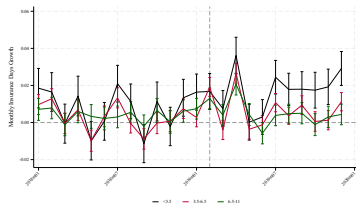


- ▶ Modest downward trend over time
- ▶ No evidence of change after MW rise [event study](#)

Event study: days of employment

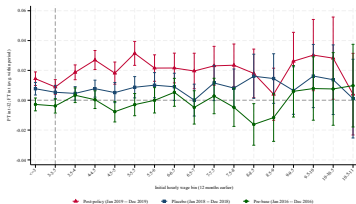
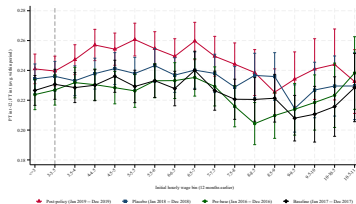
[back](#)

Figure: Days of employment, if remain employed



Transition from part-time to full-time employment [back](#)

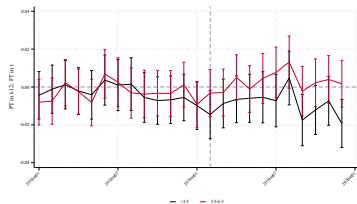
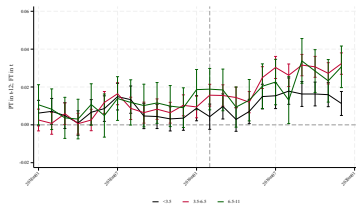
Figure: Probability of PT to FT transition



- ▶ No substantial differences across wage bins
- ▶ Upward trend over time [event study](#)

Transition from part-time to full-time employment [back](#)

Figure: Probability of PT to FT transition

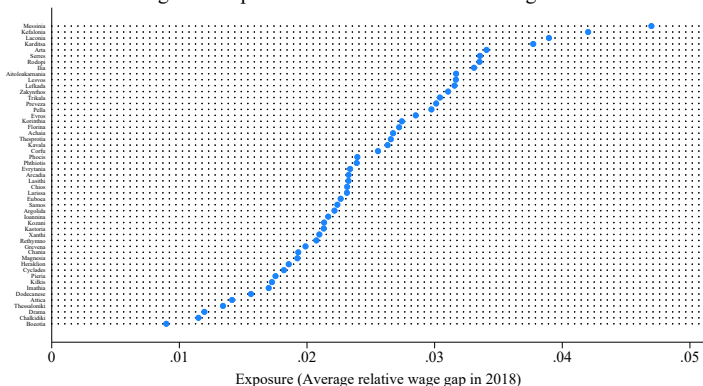


[back](#)

- to satisfy new MW $\bar{w}$: $gap_{irt} = \max\{\bar{w} - w_{irt}, 0\}$

$$exposure_{rt} = \frac{\sum_i gap_{irt}}{\sum_j w_{irt}}$$

Regional Exposure to the 2019 Minimum Wage Increase



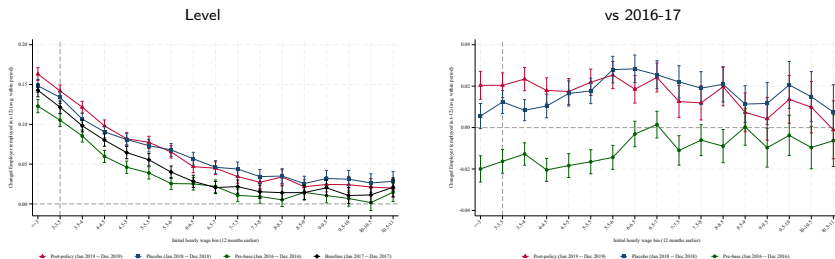
- ▶ e_{rt} = employment in region r , time t
- ▶ $\Delta_{12} = e_{rt} - e_{rt-12}$ = year-on-year employment growth
 - ▶ Difference to control (very strong) seasonality
- ▶ Compute linear employment growth trend at regional level in pre-policy months γ_{rt}
- ▶ Parameter β_{tau} captures effect of MW on employment growth

$$\Delta_{12}y_{rt} = \sum_{\tau \neq Jan2019} \beta_{\tau} (Exposure_r \times 1_{t=\tau}) + \alpha_r + \gamma_{rt} + e_{rt}$$

Probability of switching employers [back](#)

- ▶ Upward trend in job-to-job moves
- ▶ Labor market recovery

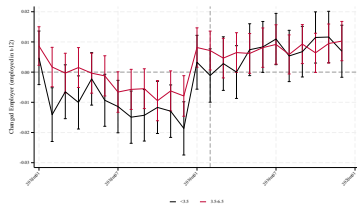
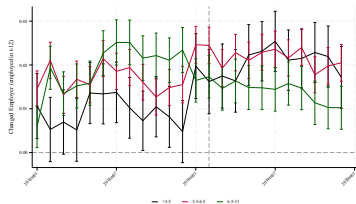
Figure: Probability of switching employers [event study](#)



Event study: switching employers

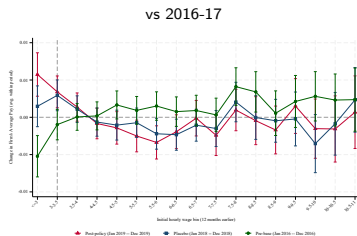
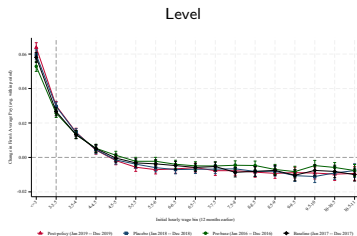
[back](#)

Figure: Probability of switching employers



- ▶ Lower-wage workers move to better-paying firms
- ▶ Essentially, no change after MW rise

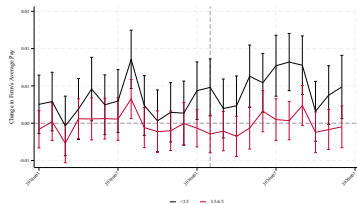
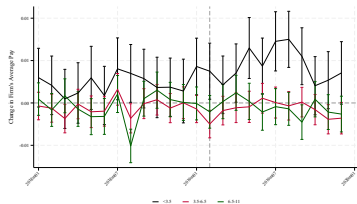
Figure: Change in average wage of employer [event study](#)



Event study: employer's average wage

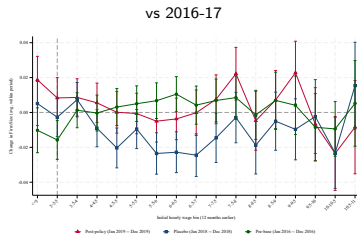
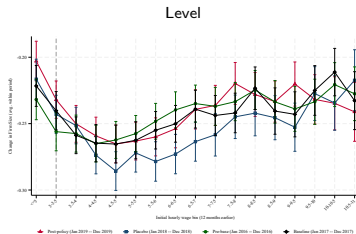
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Figure: Change in average wage of employer



- ▶ No visible patterns regarding the size of old vs new firm

Figure: Change in employer's size [event study](#)



Event study: employer's size

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Figure: Change in employer's size

