The effectiveness of job-retention schemes: COVID-19 evidence from the German states

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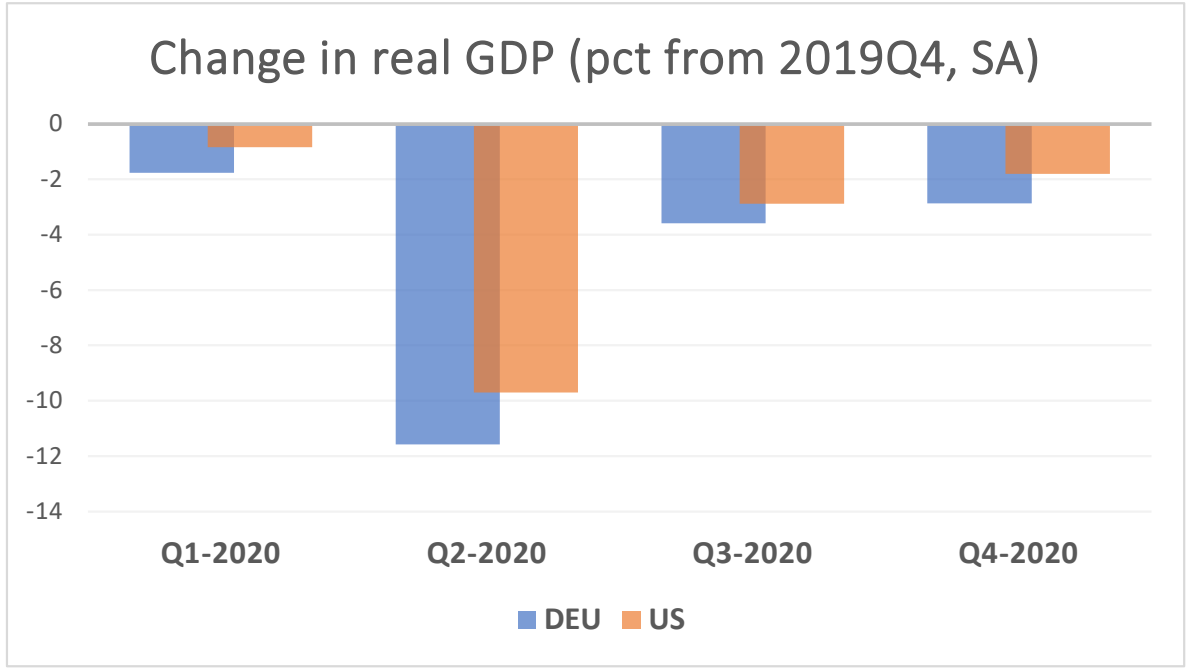
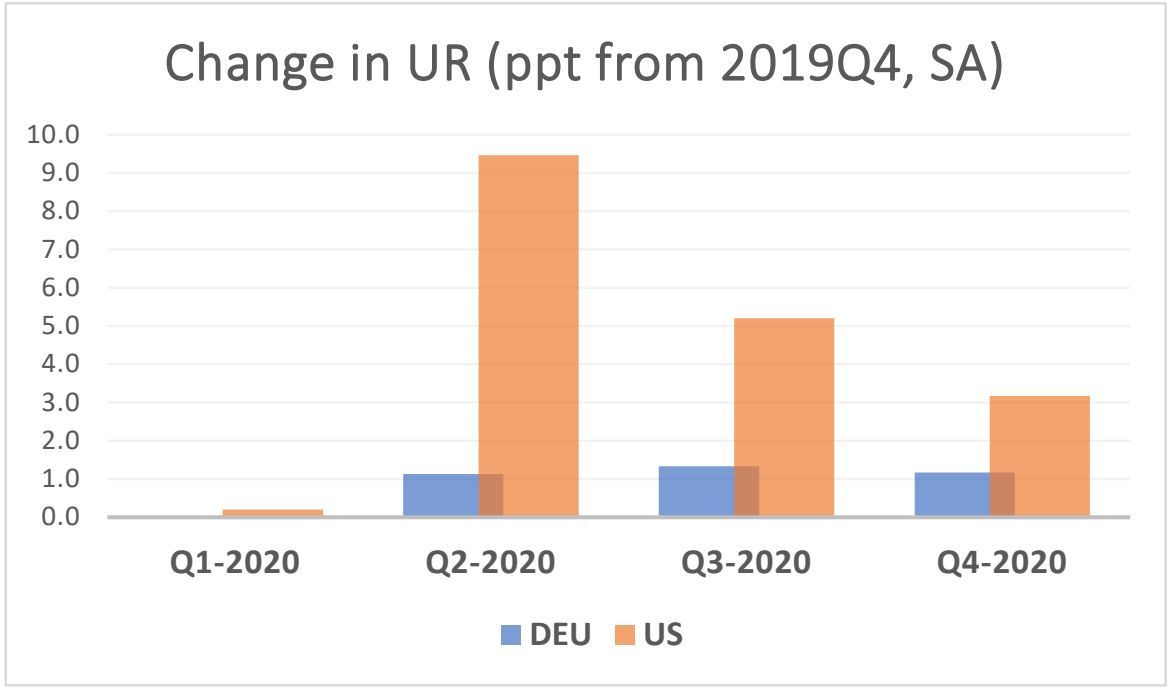
Consider, for a moment, a tale of two countries. Both have suffered a severe recession and lost jobs as a result but not on the same scale. In Country A, employment has fallen more than 5 percent, and the unemployment rate has more than doubled. In Country B, employment has fallen only half a percent, and unemployment is only slightly higher than it was before the crisis.

Don't you think Country A might have something to learn from Country B?

Krugman, 2009

US vs. German labor market performance during COVID pandemic





Research questions

- Did Kurzarbeit (KA) take-up during the pandemic preserve jobs? By how much?
  - Challenge: identification! Labor demand shocks are unobservable and KA uptake strongly correlates with unemployment
- Did KA support domestic demand?
  - Less analyzed in the literature
  - Insights can provide additional argument in favor of STW during recessions
- Will KA impede necessary reallocation during recovery?
  - Concerns about KA slowing necessary structural transformation toward a post-COVID economy

Contribution to the literature

- Sparse literature, some existing studies using either cross-country or firm-level data around GFC
- Cross-country studies: difficulty comparing short-time work (STW) programs across countries; interaction with other policies/institutions.
- Firm-level studies: database limitations; GE effects not captured.

Our strategy: Exploit *state-level high-frequency* variation in KA take-up.

- Institutional framework of KA is common to all states.
- Labor demand shock is state-specific (shift-share metric).
- KA take-up instrumented using ex-ante state-specific measure of KA eligibility.

1. KA as a labor market stabilization tool.

Empirical strategy (1)

- By design, KA take-up should reduce fluctuation of employment in response to business cycle shocks, i.e.:

$$\eta_{z,st} = \alpha_1 + \alpha_2 KA_{st}, \text{ where } \alpha_2 < 0 \text{ and } \alpha_1 > 0$$

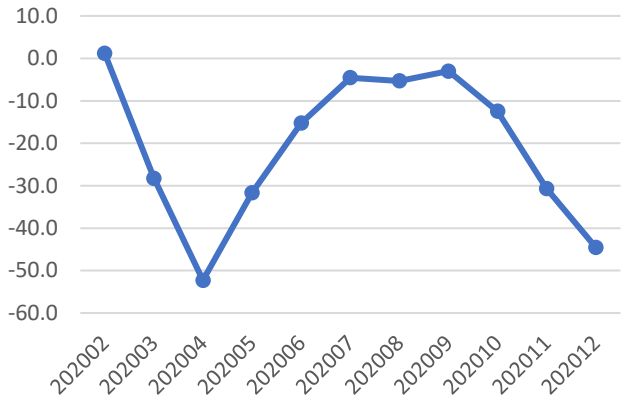
- Substituting into an empirical labor demand equation:

$$z_{st} = \alpha_z + \alpha_1 y_{st} + \alpha_2 y_{st} \times KA_{st} + \alpha_3 X_{st} + \gamma_s + \gamma_t + \epsilon_{st}$$

- This is our estimating equation, and we can test:
  - $\alpha_1 > 0, \alpha_2 < 0$ if z = employment growth
  - $\alpha_1 < 0, \alpha_2 > 0$ if z = change in unemployment

Measure pandemic shock y_{st} as overall fall in retail mobility interacted with exposure

Retail & Recreation Mobility
(change relative to pre-pandemic baseline)



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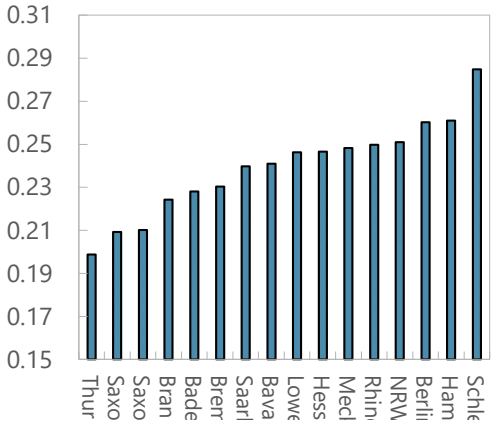
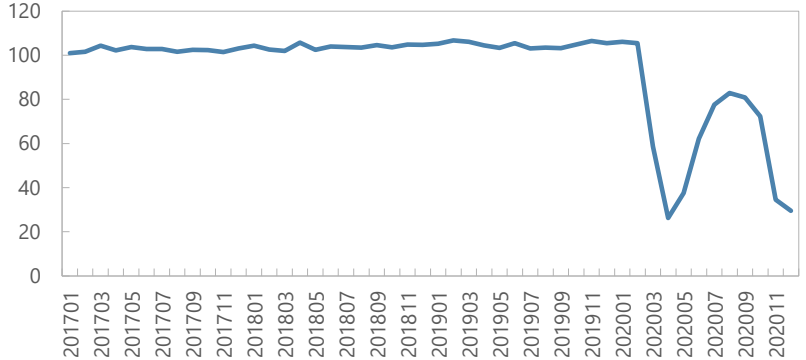
Employment share in contact-intensive sectors
(2019 average)



Turnover index in accommodation and food services
(Volume index, SA, 201701=100)



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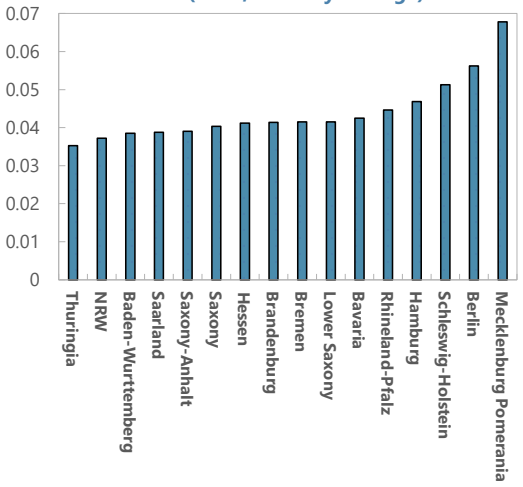
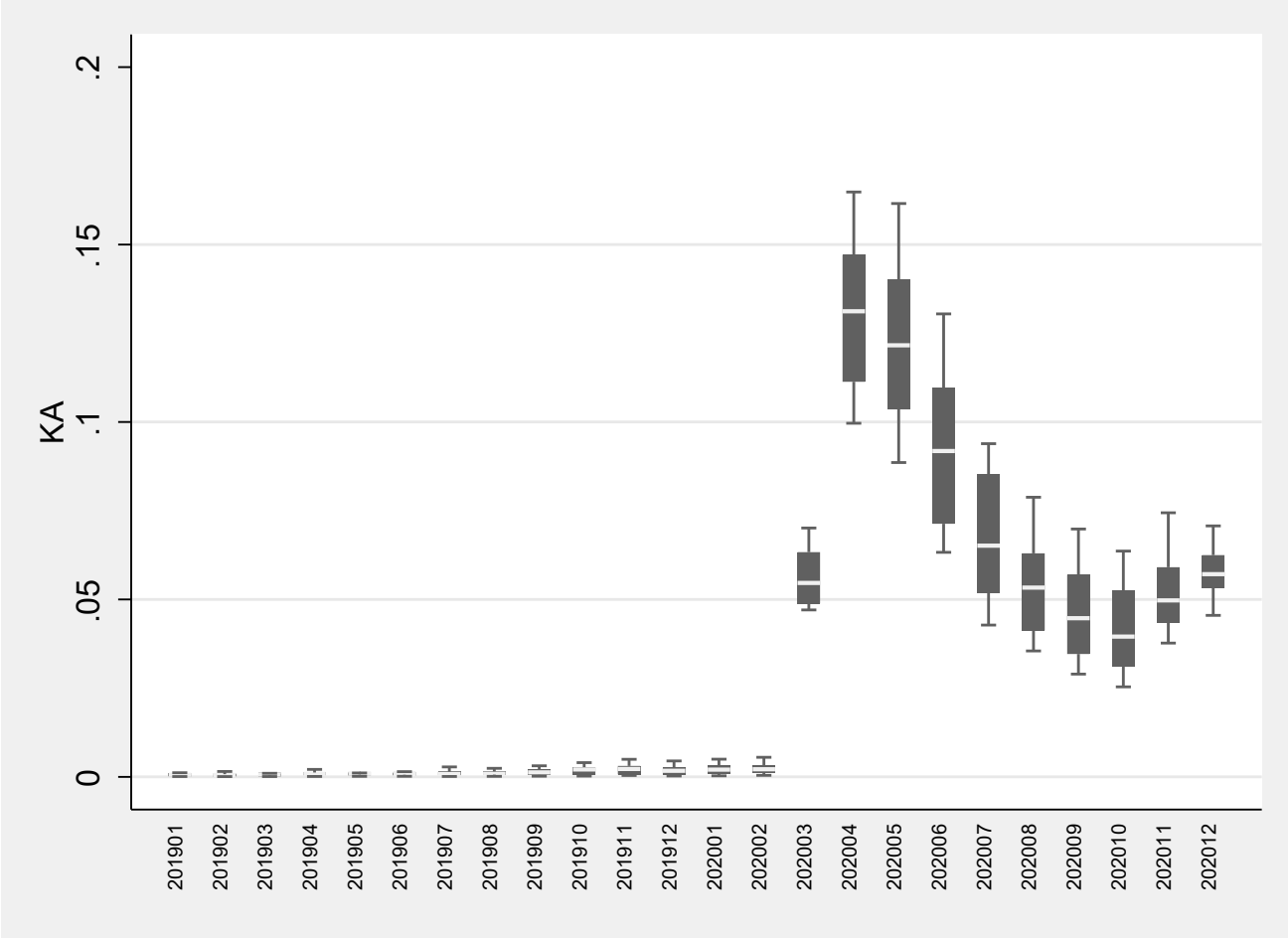
Employment share in Accommodation & Food services
(2019, monthly average)

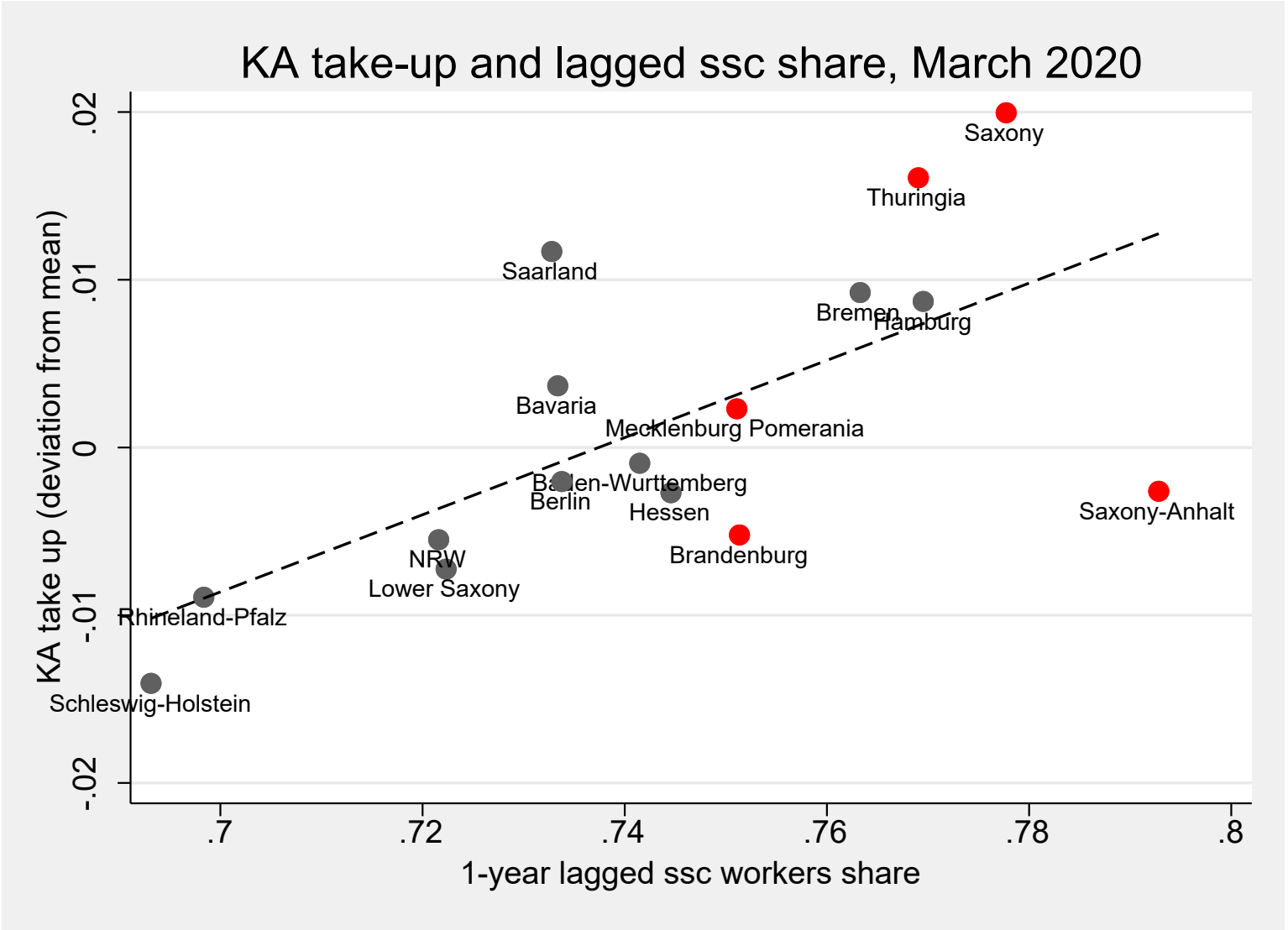


Monthly variation in KA usage across states (Jan to Dec 2020)…

Share of workers on KA (in percent of total employment), January-December 2020



…instrumented using pre-existing share of workers making social security contributions:



Baseline Results

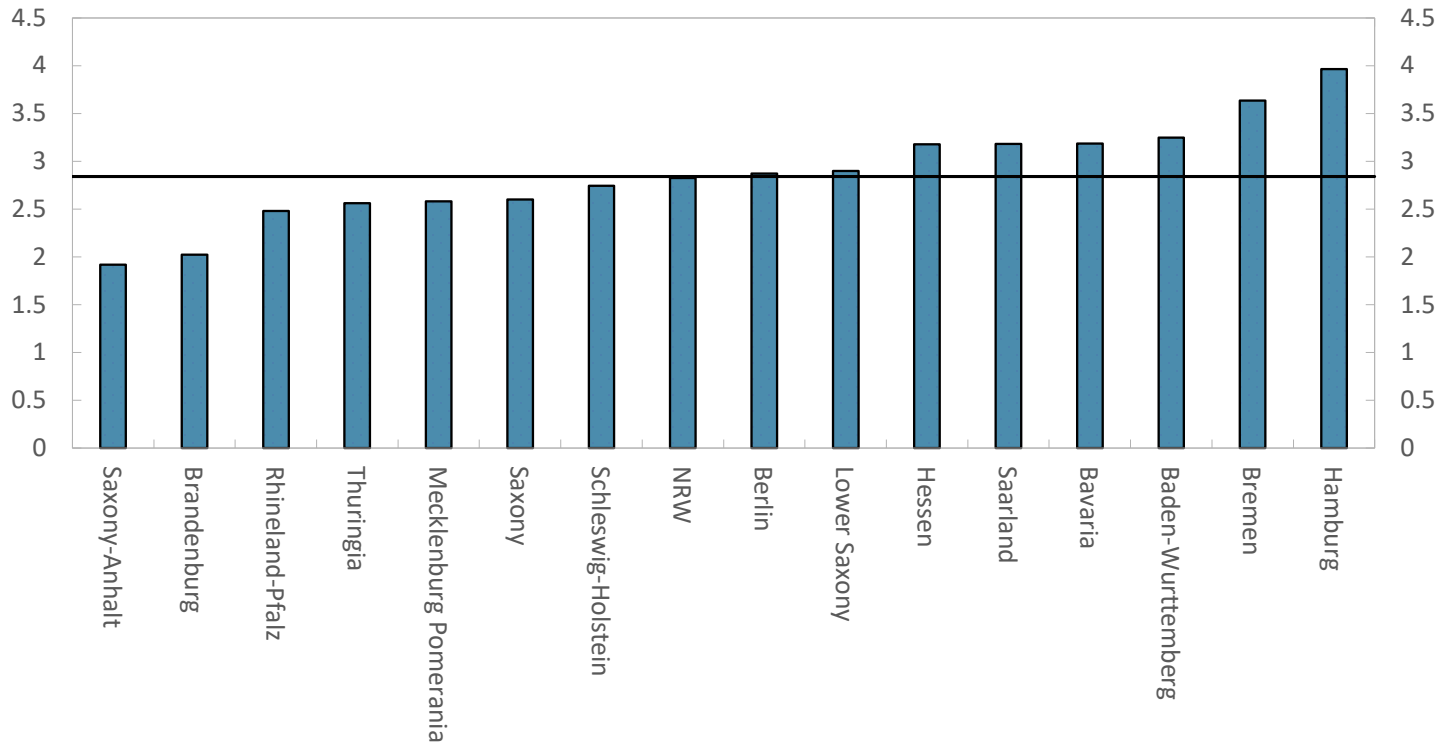
	(1)	(2)	(3)	(4)
	DV: Change in UR		DV: Employment growth	
y^{ci}_st*KA_st	**3.841*** **		**-4.531*** **	
	(0.750)		(0.816)	
y^{ci}_st	-0.308		0.535*	
	(0.242)		(0.302)	
y^{af}_st*KA_st		6.535***		-7.059***
		(1.022)		(1.245)
y^{af}_st		-0.820***		0.790***
		(0.109)		(0.133)
Observations	192	192	192	192
	First-stage results			
	DV: $y^{af/ci}$_st*KA_st			
sscshr_s,t-1	**14.753*** **	**8.568** **	**14.753*** **	**8.568** **
	(2.268)	(1.251)	(2.268)	(1.251)
$y^{af/ci}$_st*sscshr_s,t-1	0.014	0.073	0.014	0.073
	(0.277)	(0.193)	(0.277)	(0.193)
F-stat (p-val)	28 (0.00)	29 (0.00)	28 (0.00)	29 (0.00)
Sargan overid test	0.794	0.767	0.907	0.503

What do these estimates imply in terms of *economic magnitudes*?

See next slide.

Without KA expansion, the unemployment rate would have been on average **2.9 pct** higher in 2020Q2

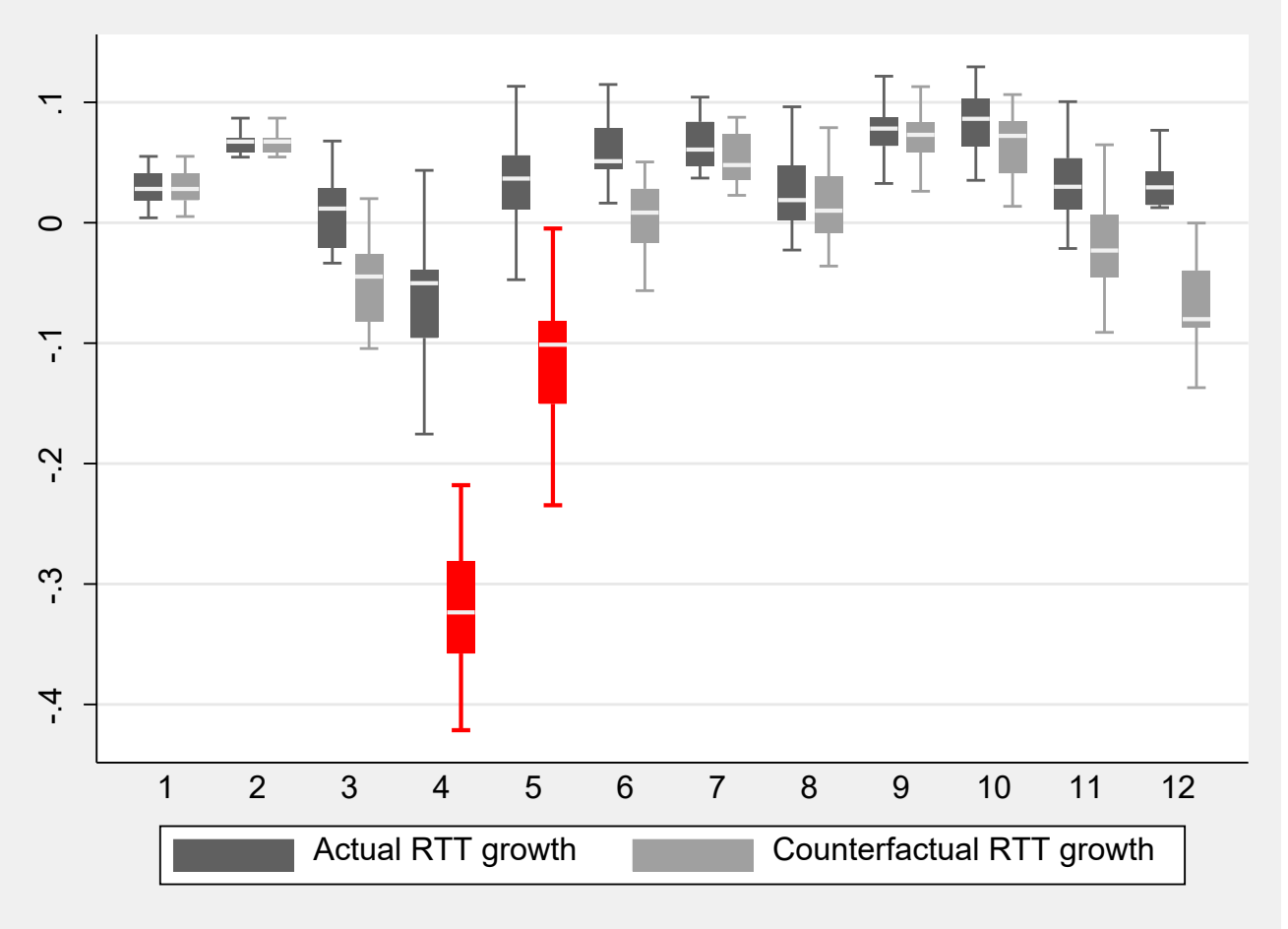
Additional counterfactual increase in UR with constant KA take-up (2020Q2, ppt)



2. KA as a demand stabilizing tool.

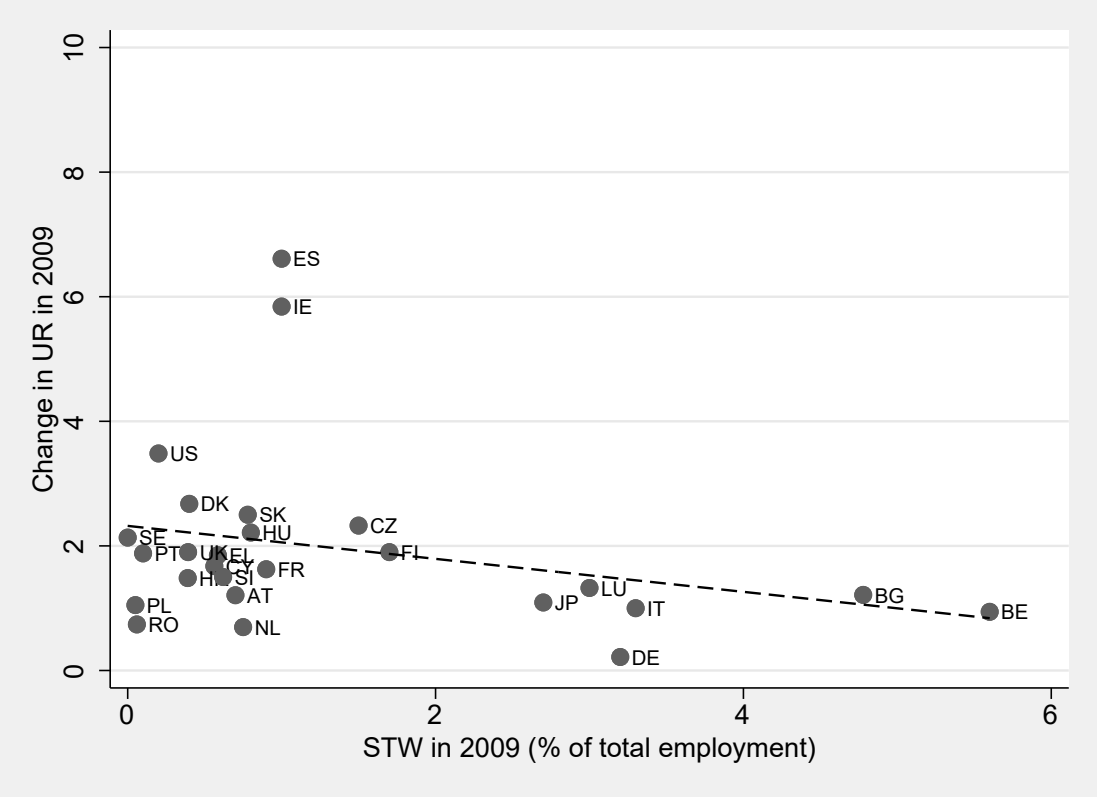
Without KA expansion, retail turnover would have been on average **15 pct lower** in 2020Q2.

Distribution of y-o-y retail turnover growth across states during January-December 2020: Actual vs. Counterfactual with no increase in KA



3. KA and post-crisis reallocation.

A look back at the cross-country GFC experience:



- STW take-up in 2009 was associated with less increase in unemployment among 26 OECD countries.
- We examine the dispersion of MRPL as measure of labor misallocation - σ_{MRPL} (as in Hsieh and Klenow, 2009).
- Estimate the cross-sectional model of long-term changes (over *j* years) in σ_{MRPL} after the GFC

Evolution of misallocation and STW take-up

Dep. Var: Δσ_(2009, 2009+j)	(1) j=3	(2) j=5	(3) j=6	(4) j=7	(5) j=8
σ_2009	-0.614***	-0.925***	-0.706***	-0.967***	-0.681**
	(0.146)	(0.133)	(0.175)	(0.280)	(0.293)
STW_2009	**-0.019**	**-0.105*** **	**-0.110*** **	**-0.117*** **	**-0.074** **
	(0.032)	(0.030)	(0.022)	(0.036)	(0.032)
σ_2009*STW_2009	**0.001**	**0.230*** **	**0.293*** **	**0.274*** **	**0.166** **
	(0.091)	(0.070)	(0.050)	(0.083)	(0.075)
Observations	26	26	26	25	23
R-squared	0.441	0.534	0.322	0.423	0.238

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Non-linearity: There is a threshold of initial dispersion above which higher STW take-up in 2009 led to more misallocation after 6-7 years.

Summary

- During COVID crisis, KA limited increase in the unemployment rate to a great extent.
- At the same time, KA use was also effective at stabilizing domestic demand.
- Impact of KA on both (LM outcomes and consumption) vary greatly across regions, owing to variation in regional exposure to lockdown measures and ease to scale up KA.
- Experience post GFC suggests more extensive STW take-up was associated with more misallocation if initial misallocation was relatively high.

Additional slides

Alternative shift share variables

- $y_{st}^{AF} = \Delta \ln Turnover\_A\&F_t \times\ empshr_{s,t-1}^{A\&F}$, i.e. Germany-wide change in volume turnover in accommodation and food (A&F), interacted with the pre-existing state-level employment share in A&F industry
- $y_{st}^{\mathrm{Ex}} = \Delta \ln exp_t \times\ expshr_{s,t-1}$, i.e., Germany-wide export growth interacted with pre-existing state-level export share

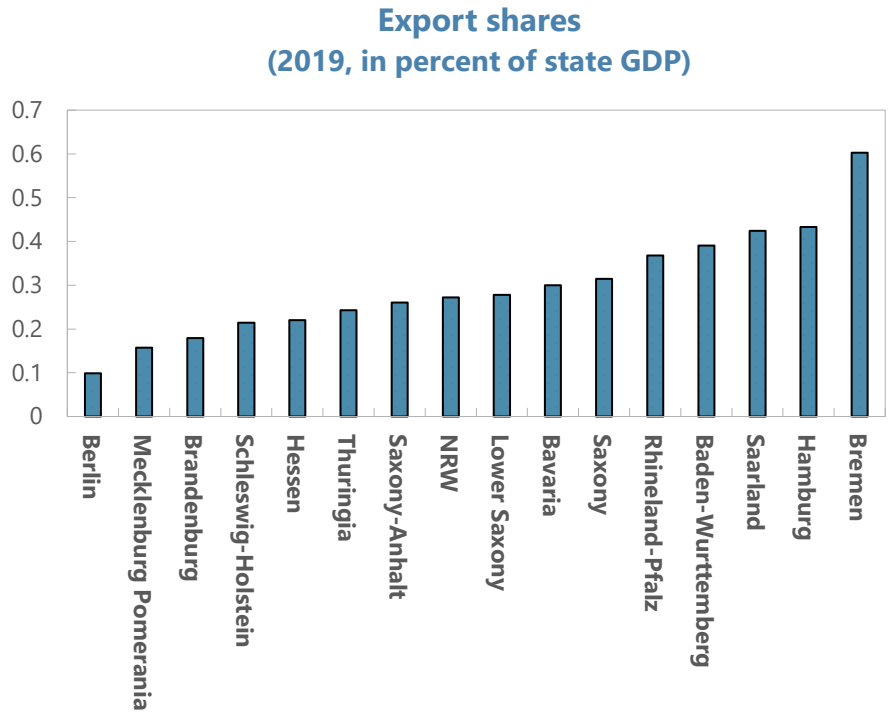
Additional identification challenge:

- KA usage is endogenous, increases when underlying conditions are bad, possibly biasing the estimate of interaction term (toward zero)
- How to identify variation in KA usage that are orthogonal to business cycle shocks?
- **Solution**: consider as external IV for KA use the pre-determined share of employment subject to social security insurance, which is the share of workers *eligible* for KA
- IV is arguably valid: pre-existing share of workers subject to SS is not correlated with the pandemic shock to contact–intensive sectors (once employment share in these sectors is controlled for)
- Is the IV strong enough?

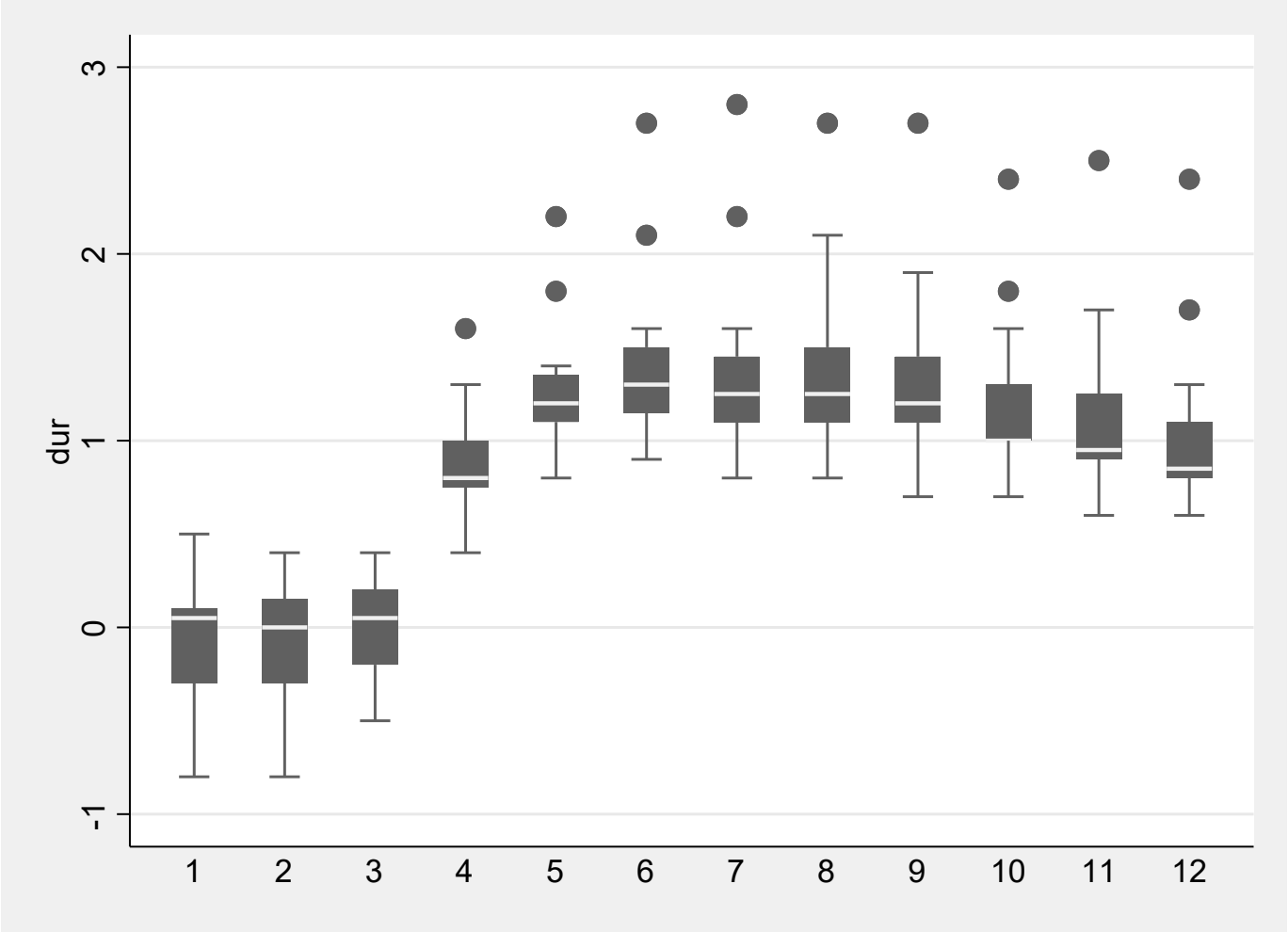
3. Variable: export shift-share shock y^{ex} - interaction term between…

- Time-series/monthly variation in export growth:

- Regional variation in export openness:



Increase in UR across states (Jan-Dec 2020)



Measure degree of misallocation with the dispersion in (log) MPL

- Following Hsieh and Klenow (2009), resource misallocation will drive dispersion in the marginal revenue product of labor (MRPL). For any sector *s*:

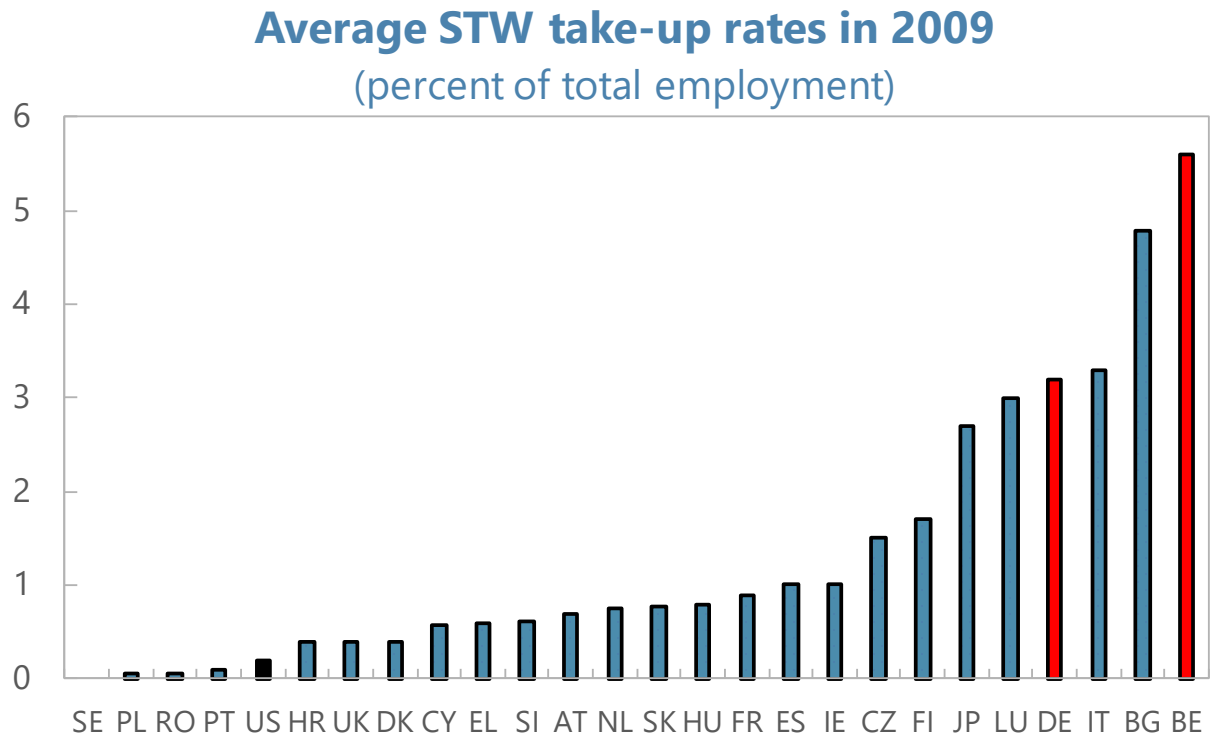
$$MRPL_s = (1 - \alpha_s)\frac{\sigma - 1}{\sigma}\frac{P_s Y_s}{L_s} = \theta\frac{1}{1 - \tau_s}$$

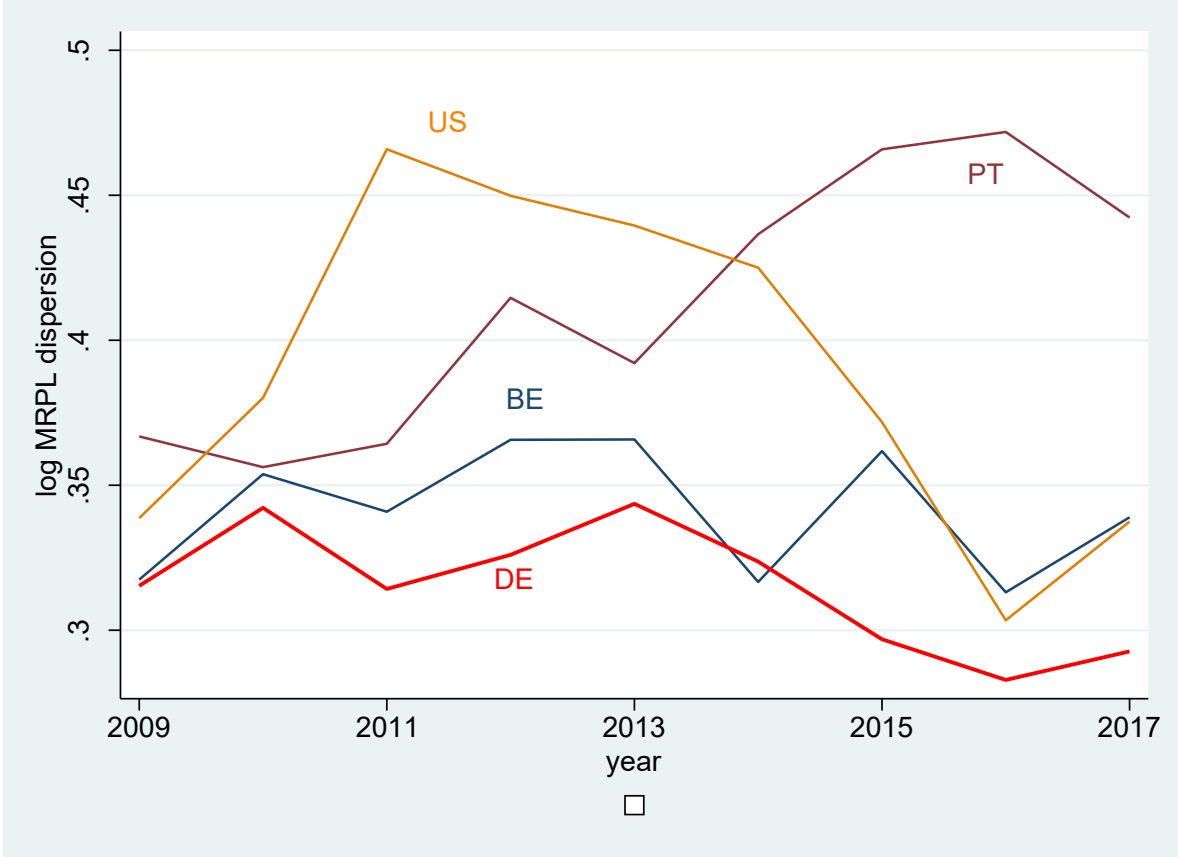
where τ_s is the degree of distortion that increase in MRPL in sector s.

- Dispersion in the (log) MRPL can then inform on the degree of misallocation of labor across sectors within an economy

- We use data from EU-KLEMS to measure (2-digit) industry-level MRPL across OECD countries.

Countries with large STW take-up (e.g. DE/BE) did not show more misallocation after GFC than those with little/no STW (e.g. US, PT)





...but initial conditions important, in particular, initial extent of misallocation.