No More Limited Mobility Bias: Exploring the Heterogeneity of Labor Markets

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I   Additional tables and figures: 2009-2014 sample

In this Supplemental Material, we present all Tables and Figures corresponding to both the main text and the Online Appendix, now using the 2009-2014 sample instead of the 2015-2019 sample as in the main text and the Online Appendix.

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Table I1: Plug-in vs corrected estimates. 2009-2014 sample

	Plug-in	Bootstrap					KSS
		(1)	(2)	(3)	(4)	(5)	
var(y)	0.140	0.140	0.140	0.140	0.141	0.141	0.141
var(Worker)	0.098	0.094	0.092	0.089	0.090	0.090	0.095
var(Firm)	0.018	0.018	0.015	0.014	0.015	0.014	0.014
cov(Worker, Firm)	0.007	0.007	0.009	0.010	0.010	0.010	0.010
corr(Worker, Firm)	0.173	0.178	0.248	0.292	0.272	0.289	0.279
Sample Selection	Match	None	Obs	Match	Worker×Occ	Worker	Worker
Clustering Level			Obs	Match	Worker×Occ	Match	Match
Observations	68,805,023	72,872,740	69,915,167	68,805,023	66,755,908	67,165,859	67,165,859
Workers	15,777,705	16,782,465	15,952,312	15,777,705	15,347,770	15,293,946	15,293,946
Firms	968,521	1,676,793	1,121,500	968,521	825,472	911,433	911,433
Time (min)		87	195	149	197	151	490

Notes: Sample 2009-2014. *Plug-in*: uncorrected estimates; *Bootstrap*: bootstrap-corrected estimates; *KSS*: corrected estimates using KSS. *var(y)*: variance of residualized log hourly wages; *var(Worker)*: variance of worker fixed effects (θ); *var(Firm)*: variance of firm fixed effects (ψ); *cov(Worker, Firm)*: covariance between worker and firm fixed effects; *corr(Worker, Firm)*: correlation between worker and firm fixed effects. At the middle, *Sample Selection*: data selection procedure for the leave-one-out connected set: *None* takes the connected set, *Obs* leaves the observation out, *Match* leaves the worker-firm match out, *Worker×Occ* leaves the worker-occupation out, *Worker* leaves the worker out; *Clustering Level*: clustering level of the covariance matrix estimator of the error terms. At the bottom, *Observations*: person-year observations; *Workers*: number of workers; *Firms*: number of firms; and *Time (min)*: time in minutes. We do 300 iterations\bootstraps for the corrections.

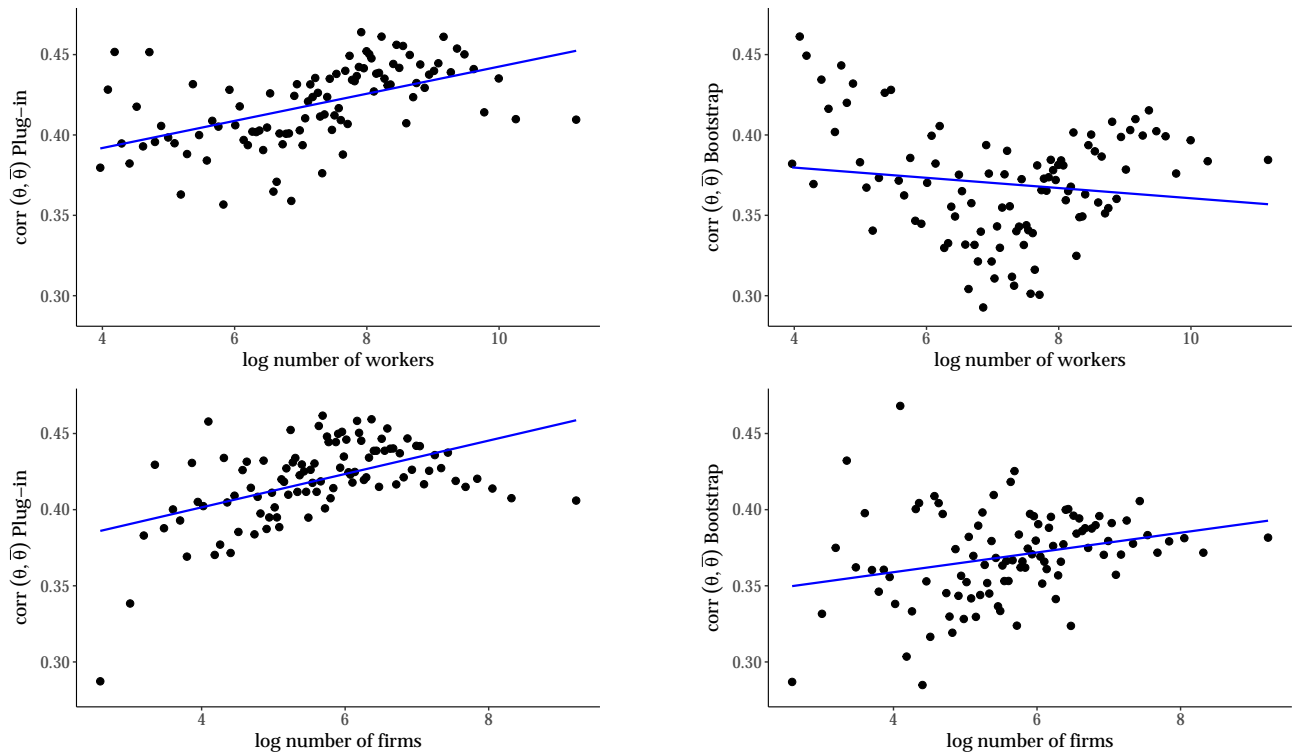Figure I1: Sorting direction and labor market size: CZ × 2-digit occ, 2009-2014 sample
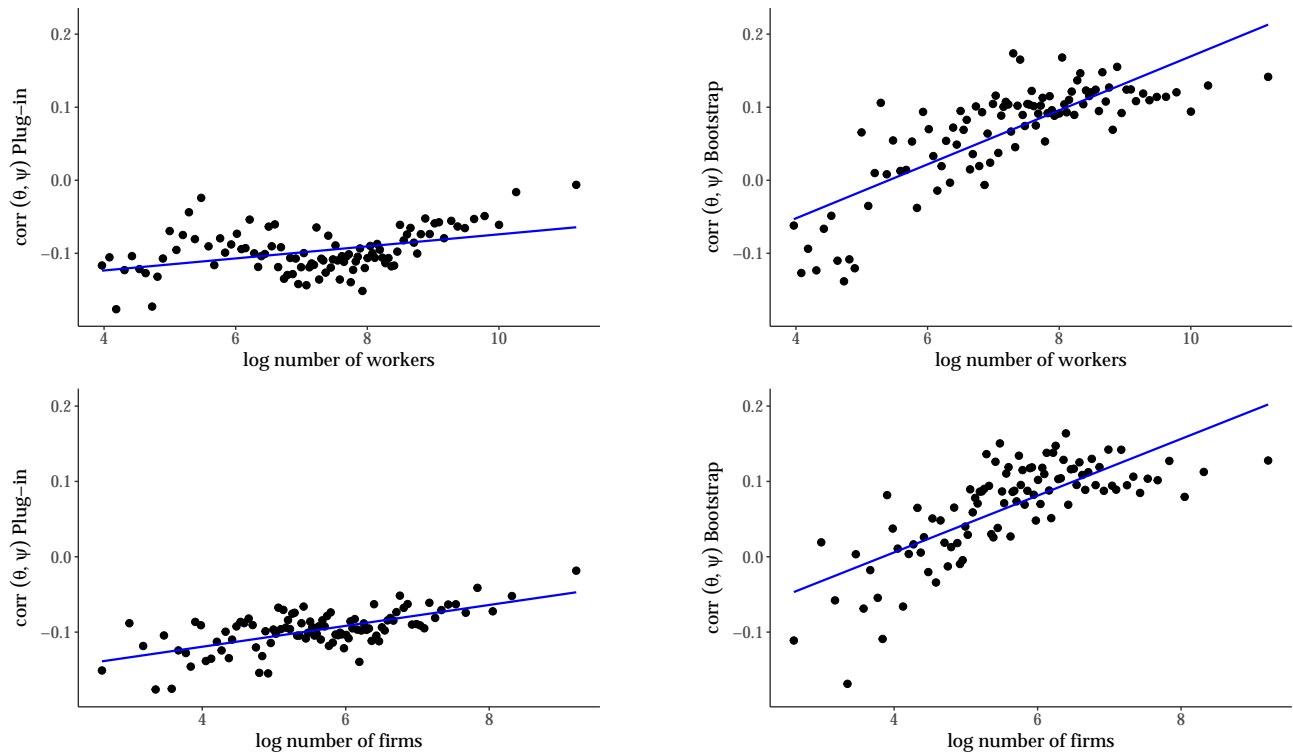
Notes: Binned scatter plots between sorting direction—the correlation between worker (θ) and firm (ψ) fixed effects—and labor market (combination of commuting zone and 2-digit occupations) size. x-axis: two different measures of size by the logarithm of the (i) number of workers for the top figures, and (ii) number of firms for the bottom figures. y-axis: on the left, plug-in estimates, on the right, bias-corrected estimates.

Table I2: Gradient of sorting on labor market size. CZ $\times$ 2-digit occ, 2009-2014 sample

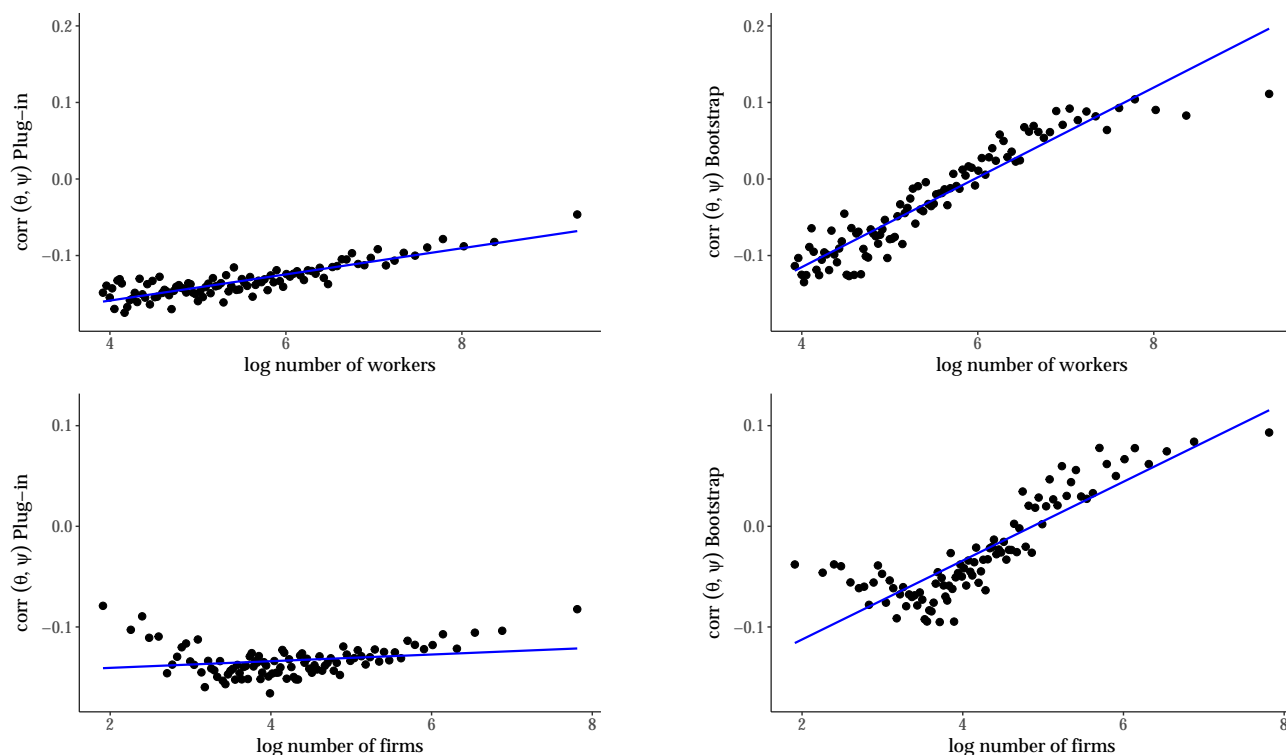|	Sorting Direction		Sorting Intensity	
	Plug-in	Bootstrap	Plug-in	Bootstrap
log No. Workers	0.0084	0.0369	0.0080	-0.0085
	(0.0013)	(0.0024)	(0.0012)	(0.0026)
log No. Firms	0.0136	0.0373	0.0110	0.0026
	(0.0016)	(0.0029)	(0.0014)	(0.0032)
Number of Markets	5,942		5,926	

Notes: Slope coefficients of an OLS regression of sorting direction—worker-firm correlation—, and sorting intensity—worker-coworker correlation—with different measures of labor market (combination of commuting zone and 2-digit occupations) size. Standard errors in parenthesis. *Plug-in*: slope estimate using plug-in estimates. *Bootstrap*: slope estimate using bootstrap-corrected estimates with the leave-match out covariance matrix estimator.

Figure I2: Sorting intensity and labor market size: CZ × 2-digit occ, 2009-2014 sample

Notes: Binned scatter plots between sorting intensity—the correlation between worker fixed effects (θ) and the average of coworkers ($\bar{\theta}$)—and labor market (combination of commuting zone and 2-digit occupations) size. x-axis: two different measures of size by the logarithm of the (i) number of workers for the top figures, and (ii) number of firms for the bottom figures. y-axis: on the left, plug-in estimates, on the right, bias-corrected estimates.

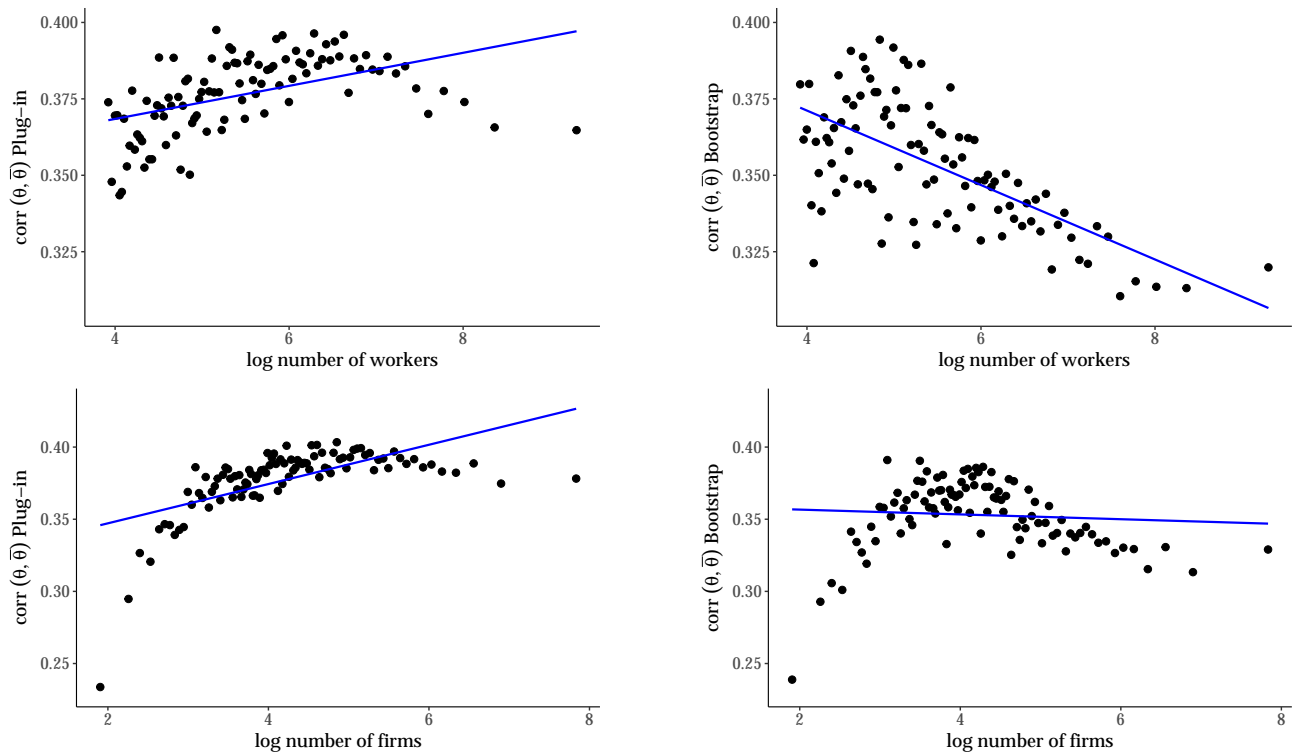Figure I3: Sorting direction and labor market size: CZ × 4-digit occ, 2009-2014 sample

Notes: Binned scatter plots between sorting direction—the correlation between worker (θ) and firm (ψ) fixed effects—and labor market (combination of commuting zone and 4-digit occupations) size. x-axis: two different measures of size by the logarithm of the (i) number of workers for the top figures, and (ii) number of firms for the bottom figures. y-axis: on the left, plug-in estimates, on the right, bias-corrected estimates.

Table I3: Gradient of sorting on labor market size: CZ × 4-digit occ, 2009-2014 sample

	Sorting Direction		Sorting Intensity	
	Plug-in	Bootstrap	Plug-in	Bootstrap
log No. Workers	0.0173	0.0586	0.0046	-0.0123
	(0.0009)	(0.0016)	(0.0008)	(0.0023)
log No. Firms	0.0029	0.0386	0.0144	-0.0023
	(0.0009)	(0.0016)	(0.0008)	(0.0024)
Number of Markets	44,447		44,343	

Notes: Slope coefficients of an OLS regression of sorting direction—worker-firm correlation—, and sorting intensity—worker-coworker correlation—with different measures of labor market (combination of commuting zone and 4-digit occupations) size. Standard errors in parenthesis. *Plug-in*: slope estimate using plug-in estimates. *Bootstrap*: slope estimate using bootstrap-corrected estimates with the leave-match out covariance matrix estimator.
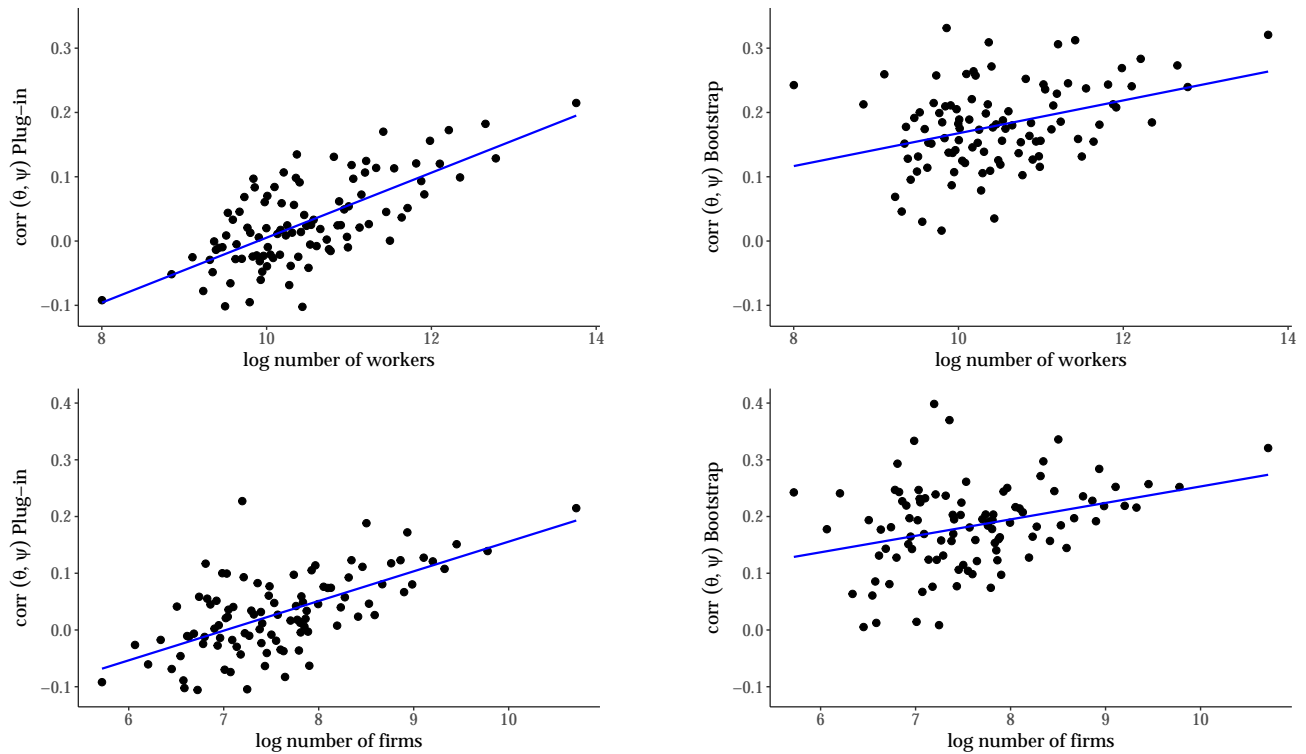
Figure I4: Sorting intensity and labor market size: CZ × 4-digit occ, 2009-2014 sample

Notes: Binned scatter plots between sorting intensity—the correlation between worker fixed effects (θ) and the average of coworkers ($\bar{\theta}$)—and labor market (combination of commuting zone and 4-digit occupations) size. x-axis: two different measures of size by the logarithm of the (i) number of workers for the top figures, and (ii) number of firms for the bottom figures. y-axis: on the left, plug-in estimates, on the right, bias-corrected estimates.

Figure I5: Sorting direction and labor market size: CZ, 2009-2014 sample

Notes: Binned scatter plots between sorting direction—the correlation between worker (θ) and firm (ψ) fixed effects—and labor market (commuting zone) size. x-axis: two different measures of size by the logarithm of the (i) number of workers for the top figures, and (ii) number of firms for the bottom figures. y-axis: on the left, plug-in estimates, on the right, bias-corrected estimates.

Table I4: Gradient of sorting on labor market size: CZ, 2009-2014 sample

	Sorting Direction		Sorting Intensity	
	Plug-in	Bootstrap	Plug-in	Bootstrap
log No. Workers	0.0511	0.0259	0.0221	0.0354
	(0.0053)	(0.0069)	(0.0026)	(0.0031)
log No. Firms	0.0518	0.0297	0.0241	0.0371
	(0.0059)	(0.0074)	(0.0028)	(0.0034)
Number of Markets	287		287	

Notes: Slope coefficients of an OLS regression of sorting direction—worker-firm correlation—, and sorting intensity—worker-coworker correlation—with different measures of labor market (commuting zones) size. Standard errors in parenthesis. *Plug-in*: slope estimate using plug-in estimates. *Bootstrap*: slope estimate using bootstrap-corrected estimates with the leave-match out covariance matrix estimator.

Figure I6: Sorting intensity and labor market size: CZ, 2009-2014 sample
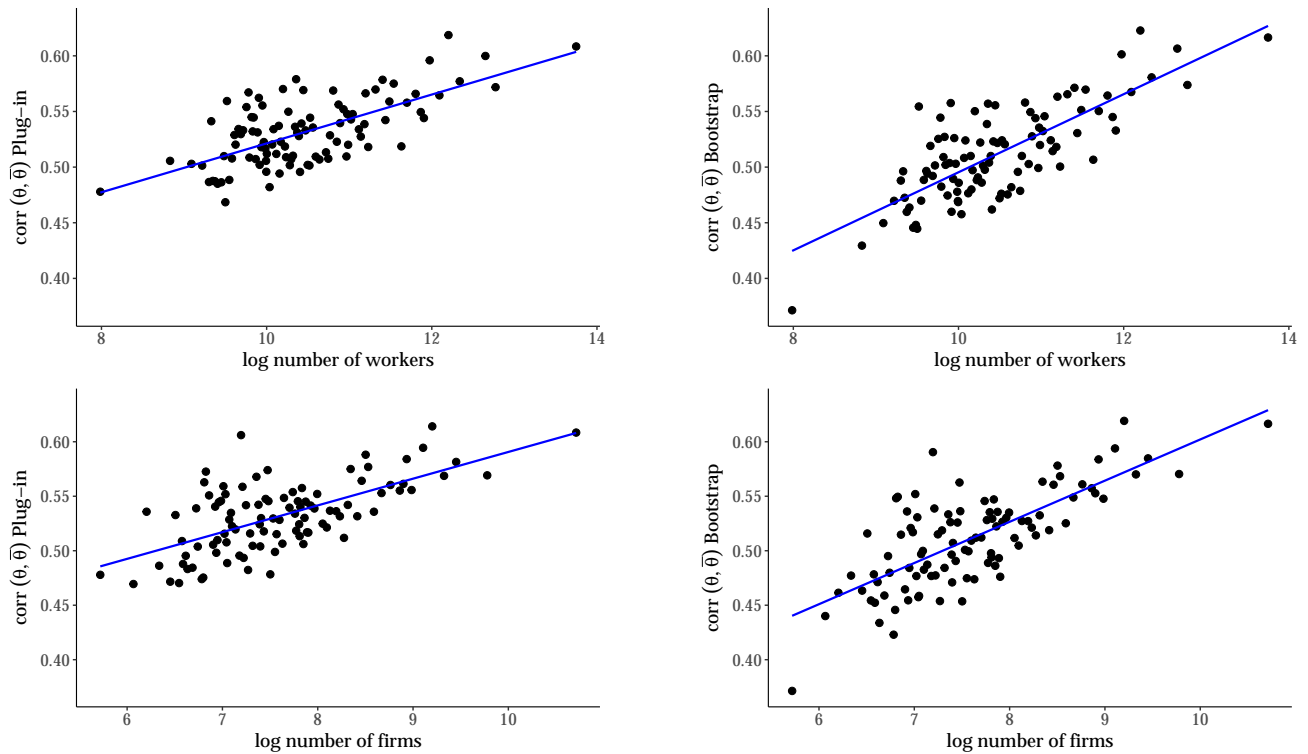

Notes: Binned scatter plots between sorting intensity—the correlation between worker fixed effects (θ) and the average of coworkers ($\bar{\theta}$)—and labor market (commuting zones) size. x-axis: two different measures of size by the logarithm of the (i) number of workers for the top figures, and (ii) number of firms for the bottom figures. y-axis: on the left, plug-in estimates, on the right, bias-corrected estimates.
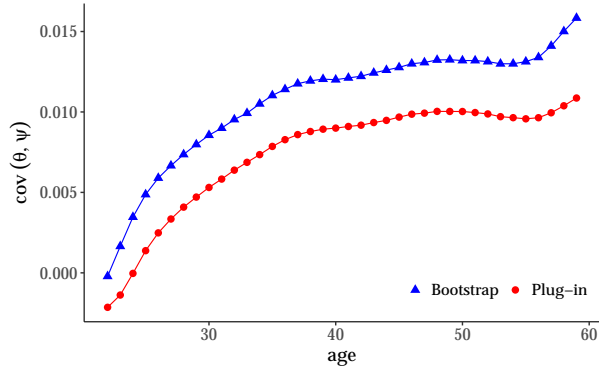
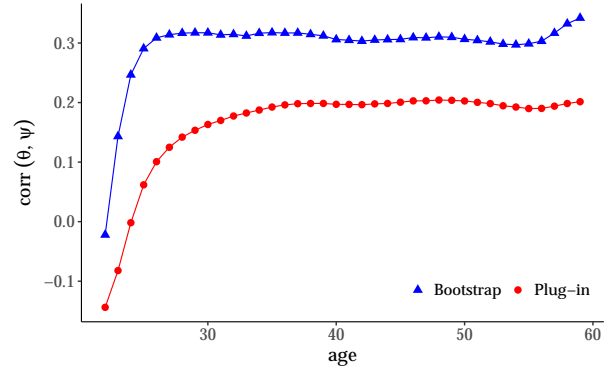## Figure I7: Life cycle patterns: 2009-2014 sample
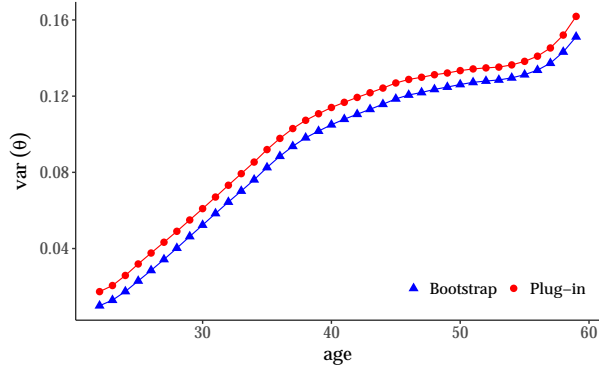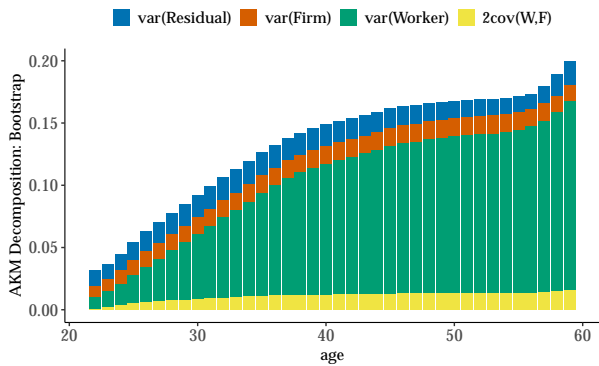

(a) Variance of worker fixed effects
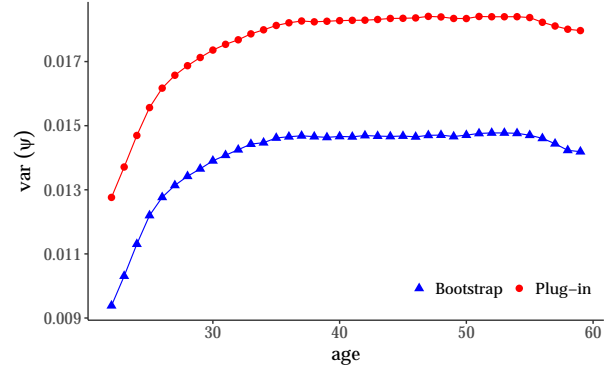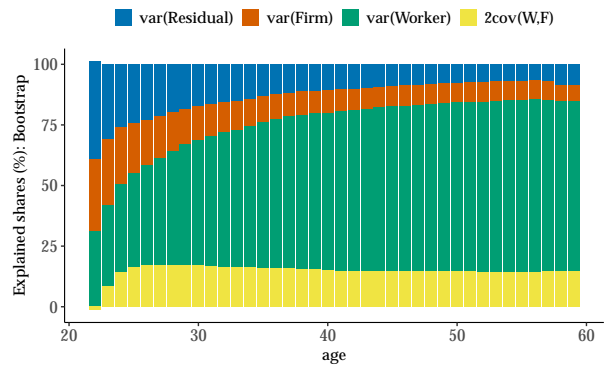
(b) Variance of firm fixed effects

(c) Covariance of worker-firm fixed effects

(d) Correlation of worker-firm fixed effects

(e) Decomposition in levels

(f) Decomposition in explained shares

Notes: Sample 2009-2014. x-axis: age. Panels (a)-(d) show plug-in and bootstrap-corrected estimates. Panels show: (a) variance of worker effects; (b) variance of firm effects; (c) covariance of worker-firm effects; (d) correlation of worker-firm effects; bootstrap-corrected variance decompositions (e) in levels, (f) as explained shares.

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References

KLINE, P., R. SAGGIO, AND M. SØLVSTEN (2020): "Leave-out estimation of variance components," *Econometrica*, 88, 1859–1898.