Discussion of

Superstar Teams: The Micro Origins and Macro Implications of Coworker Complementarities

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Summary

- Context:
  1. Worker-firm sorting $\rightarrow$ disentangling worker and firm types in wage data, measuring their correlation. (e.g., AKM, EK, BLM)
  2. Multidimensional sorting, workers have skills and sort into jobs that demand different combinations of them. (L, L-PV, etc.)
- Lukas combines insights from (1) and (2) with the fact that the importance of skills/tasks has greatly changed over time.
- He "unpacks" the firm type $\rightarrow$ co-workers/teams.
- Contributions:
  1. Novel evidence: co-worker sorting $\uparrow \leftrightarrow$ specialization $\uparrow$
  2. Development of a microfounded production function, embedment into a sorting model with 'large' firms.
  3. Application: explain rising between-firm wage inequality (Card et al., 2013; Song et al. 2019) with coworker sorting.
- Impressive work along all dimensions. I learned a lot.

Data and Empirical Model I

- IAB data, SIEED sample 1.5% of all establishments, all workers plus their histories.
- Why do you need all workers at an establishment if you average over co-workers anyway?
- (Even more) limited mobility in this sample?
- To address limited mobility, k-means clustering on within-establishment wage distributions (BLM, Schmieder et al., 2023, but only for small firms).
- AKM with firm-cluster FE instead of firm FE.
- Mobility will depend on the number of clusters k?
- Small connected set with small k? How large is your k?
- The variance of the worker fixed effects (and hence the correlation with coworkers-effects) mechanically depend on how large k is.

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Data and Empirical Model II

- α_i is re-estimated for every time window, so the FEs for individual workers in the data change over time.
- How does this affect the measured correlations? Is the change in the co-worker sorting correlation due to turnover or are workers getting better? Learning? From co-workers?
- How is the average co-worker effect computed exactly? By establishment or cluster (I think establishment)? What is k?
- The worker FE α_i only identified for movers, so the stayer FEs must be imputed... but using the firm-cluster FEs although you calculate the co-worker effect at the establishment level?
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- If most workers are stayers in your (short) time windows, is there a mechanical effect that drives the correlation upwards?

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The Firm as a "Team Assembly Technology"

- Microfounded team production function of the CES form.

$$f(x_1, \cdots, x_n) = \underbrace{n^{1+\chi}}_{\text{efficiency gains}} \underbrace{\left(\frac{1}{n} \sum_{i=1}^{n} (a_1 x_i)^{\frac{1}{1+\chi}} \right)^{1+\chi}}_{\text{complementarity}}. \quad (1)$$

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- What are the implications of (1) for wage setting?

The Firm as a "Team Assembly Technology"

- I think it's important to compare your results to Eeckhout & Kircher (2018, ECTA) and other sorting models with multi-worker firms. EK (2018) also build on Garicano (2000).
- Four margins of complementarity: type complementarity, quantity, span of control, managerial resources.
- In short, there is worker-firm sorting and firm size is limited by span-of-control issues.
- Result: multi-worker firms hire a mass of workers of exactly one optimal type.
- Lukas' argument: Firm's want multiple types to reap the benefits of specialization.
- But you also have a "pure sorting" result.
- What is the difference?

Sorting Model with Multi-Worker Firms

- Lukas embeds the team-production model into a labor market with search frictions.
- Firm is either idle or has one/two workers (tractability).
- Key issue: what happens to the first worker's wage if another worker joins? Who gets the gain of x becoming more productive when x' joins.
- The wages are re-bargained with unemployment as the workers' outside option. All workers are marginal (Stole & Zwiebel).
- First question: does this imply that the firm threatens the workers with shutting down and become idle instead of remaining a one-worker firm? Is this credible?

Sorting Model with Multi-Worker Firms

- The value of a producing one-worker firm depends on an expectation about the potential type of the second worker.
- The worker in a one-worker firm gets a share of this potential future surplus $S(x'|x)$.
- Second question: but what happens if the "wrong" worker type joins, i.e. one that is worse than the "average" worker type in the integral over $\tilde{x}'$ (equation 31).
- Can re-negotiated wages fall in that case?
- Can this be tested empirically?
- Endogenous separations would also have to be possible?
- Third question: What are the implications of $w(x'|x) = w(x|x')$ for your main result?
- And why $\ln \bar{w}(x, x') = \frac{1}{2}(\ln w(x \mid x') + \ln w(x' \mid x))$?

Key moments I

- "The strength of coworker complementarities in production is proportional to the strength of coworker complementarities in wages"

$$\frac{\partial^2 f(x, x')}{\partial x \partial x'} = \frac{1}{\omega} \frac{\partial^2 w(x \mid x')}{\partial x \partial x'}.$$

- Here, firm productivity only reflects labor productivity, which depends on the worker-type composition.
- This implies that the most productive firm (in terms of labor productivity) must pay the highest wages?
- Is this true in the data?
- If not, what does this imply for the model-based analysis of allocational efficiency?

Key moment II

- "To measure how the slope of the wage function with respect to the coworker type varies with the own type, worker and coworker type measures are combined with the joint wage distribution"

$$\frac{w_{it}}{\bar{w}_t} = \beta_0 + \beta_x \hat{x}_i + \beta_{x'} \hat{x}_{-it} + \beta_c \left(\hat{x}_i \times \hat{x}_{-it}\right) + \psi_{j(it)} + v_{o(i)t} + \xi_{s(i)t} + \epsilon_{it},$$

- x_i and x_{it} are already estimated from wage data?
- Now you have employer (and occupation/industry) FEs?
- So the empirical co-worker correlation coefficient that you target with the model is within-employer.
- The caveat about the stayer-imputation applies here as well, but it gets more confusing with the other FEs.

Remaining Questions

- How can we differentiate between co-worker sorting and worker-firm sorting? Observationally equivalent?
- Alternative stories explored in the literature on between-firm wage inequality: heterogeneous firm productivity, amenities, goods and/or labor market power.
- Superstar firms or superstar teams?
- What explains the remaining 60% of increasing between-firm inequality? Is the firm component the residual?
- Depends on whether the measured 40% co-worker sorting contribution is really orthogonal to firm effects.
- Idea here: the firm component (mainly) reflects workforce composition.
- There is a lot of firm heterogeneity left once you control for workforce composition (see Lochner & Schulz, 2024).

Some Further Comments

- Residual wages. Notation?
- Dropping Singletons?
- What happens to the firm-cluster FEs? Do you use them for anything?
- German Reunification?
- Could teams also act as an amenity?
- What does your model imply for wage changes that come with EE transitions? Could there be EE into idle firms?
- Could observing joint worker mobility (teams moving) help to identify co-worker sorting? See Bonhomme (2021).
- "The AKM approach (...) is inconsistent with the structural model?" (p.33) Which model?
- Abowd et al. (2018) and Lochner & Schulz (2024) have structural models that nest and AKM wage equation.