# Understanding Wage Growth: The Role of Coworkers

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## MOTIVATIONS AND QUESTIONS

- Wages typically grow over the life cycle
  - Ben-Porath (1967): workers accumulate human capital while working
  - Less explored: mechanisms of on-the-job human capital accumulation
- An obvious but vital channel: interaction with coworkers
  - Yet, little evidence from both empirical and theoretical perspectives
- **Research Questions**:
  1. How much do coworkers contribute to future wages?
  2. What are the channels through which this contribution is identified?

## LITERATURE REVIEW

- Coworker quality and contemporaneous wage levels
  - Specific workplace: e.g., Mas and Moretti (2009); Brune, et al. (2020)
  - Local labor market: e.g., Cornelissen et al. (2017); Battisti (2017)
- Coworker quality and wage growth
  - Herkenhoff et al. (2018); Jarosch et al. (2019); Nix (2020)
  - *Limitation*: use observables (wage or education) as a measure of quality
- Estimation on peer effects
  - Mas and Moretti (2009); Arcidiacono et al. (2012); Hong and Sølvsten (2020)

## DATA AND MEASURES

- Veneto Worker History - administrative social security data in Veneto (Italy)
  - *Worker records*: track working population from 1982 to 2001
  - *Firm records*: all private firms where any worker has worked
  - *Contribution records*: wage, working hours, and contract info, etc
- Some sample restrictions
  - keep only a worker's primary full-time job
  - restrict age from 16 to 65
  - firm size between 2 and 5000
- Measures and terminologies
  - *Peer group*: workers employed in same firm & occupation in a year.
  - *Worker's quality*: the unobserved worker's fixed effect estimated from model

## EMPIRICAL STRATEGY

- Baseline regression builds on AKM (Abowd et al., 1999):

$$w_{i,t+h} = \alpha_i + \beta \bar{\alpha}_{-i,t} + \mathbf{x}'_{it}\gamma + \psi_{jt} + \eta_{ot} + \theta_{oj} + \varepsilon_{it} \qquad (1)$$

  - $w_{i,t+h}$ is the log weekly earnings at time $t+h$, where $h \geq 0$
  - $\alpha_i$ is the worker fixed effect
  - $\bar{\alpha}_{-i,t}$ is the *average* coworker's quality at time $t$
  - $\mathbf{x}_{it}$ is a set of individual time-varying characteristics
  - $\psi_{jt}, \eta_{ot}, \theta_{oj}$ are firm-year, occupation-year, firm-occupation fixed effects
- Estimation using methodology developed by Hong and Sølvsten (2020).

## MECHANISMS: AN EVENT-STUDY APPROACH

- The effect of coworker quality $\beta$ is identified through three mechanisms
  1. Job stayers: changes in peer when a worker *enters* or *leaves*
  2. Job switchers: changes in peer quality when moving to another firm
- We provide **an event-study analysis** of these job changes.
  [with ex-ante propensity score matching]
  1. The impact of a high-/low-quality worker's enter or leave on his *new peer*.
  2. The impact of moving into high-/low-quality peer on mover's *own* wages.
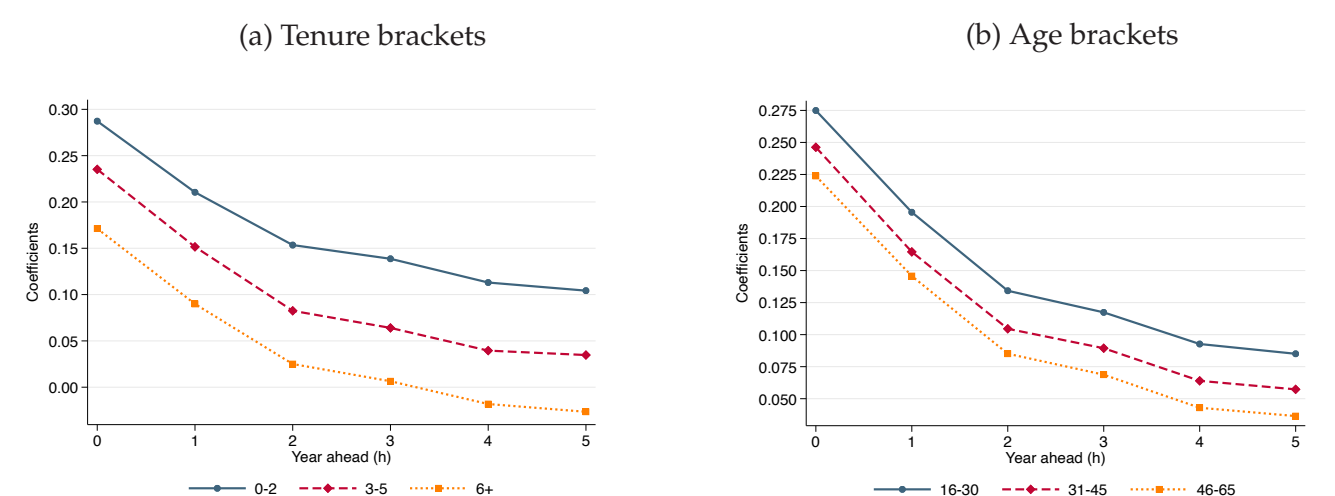
## THE EFFECT OF COWORKER'S QUALITY ON FUTURE WAGES

- Baseline results

$$w_{i,t+h} = \alpha_i + \beta \bar{\alpha}_{-i,t} + \mathbf{x}'_{it}\gamma + \phi_{jt} + \delta_{ot} + \theta_{oj} + \varepsilon_{it},$$
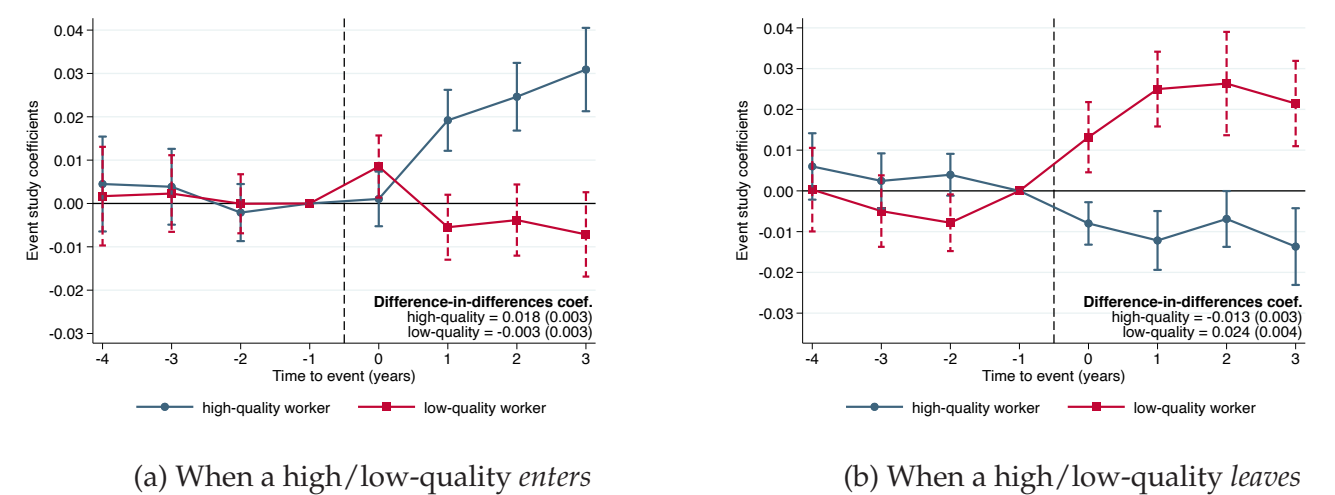


- Heterogeneous effects
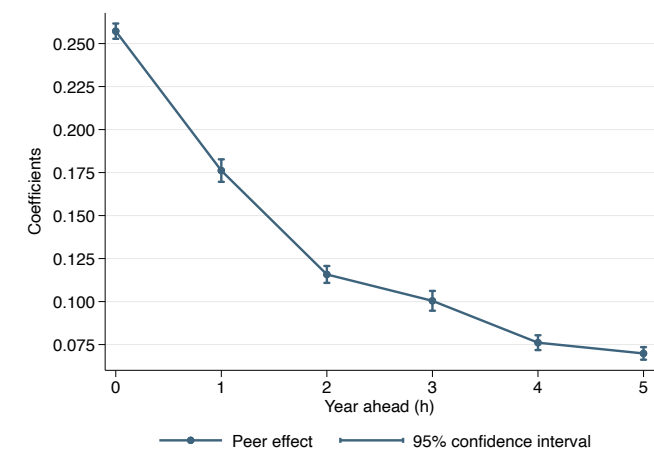


(a) Tenure brackets      (b) Age brackets

## MECHANISMS: AN EVENT-STUDY APPROACH

1. The impact of a high-/low-quality worker's enter or leave on his *new peer*.

$$w^{new}_{-i,t} = \delta_t + \phi_{j(i)} + \sum_{k \neq -1} \beta_k (Treat_{j(i)} \times \mathbf{1}\{t=k\}) + \epsilon_{-i,t}$$

  - Treat = 1 if a high-/low-quality worker enters or leaves
  - Treat = 0 if a similar-quality worker enters or leaves



(a) When a high/low-quality *enters*      (b) When a high/low-quality *leaves*

2. The impact of a worker moving into high-/low-quality peer on his *own* wages.

$$w_{i,t} = \delta_t + \eta_i + \sum_{k \neq -1} \gamma_k (Treat_i \times \mathbf{1}\{t=k\}) + \epsilon_{i,t}$$

  - Treat = 1 if a worker moves into a high- or low- quality peer.
  - Treat = 0 if a worker moves into a similar-quality peer.
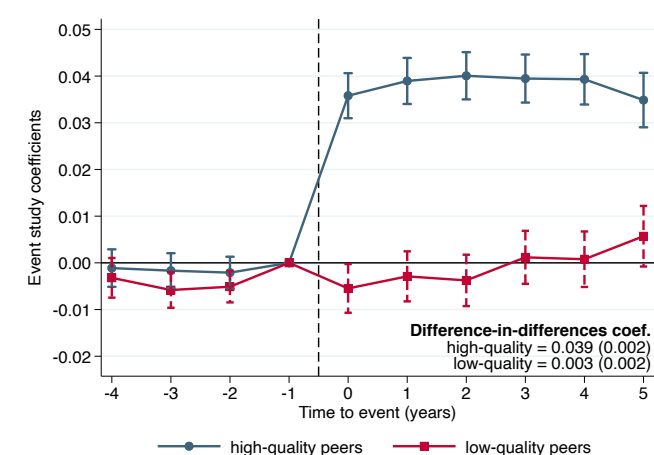


## CONCLUSION

- Explore an under-studied component of wage growth: coworker's quality.
- The AKM model shows that the coworker is critical in generating future wages
  - Working with better peers now leads to higher wages even after 5 years.
- An event-study approach explores the mechanisms behind such an effect.
  - The join (or leave) of a high- (or low-) quality workers, and moving into high-quality peers can imply the highest future wage gains.