Discussion of "Artificial Intelligence and the Labor Market" by Hampole, Papanikolaou, Schmidt, Seegmiller

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Research Question

Core Question:

- How does AI adoption affect labor demand at the task and occupation level?
- Why are aggregate employment effects small despite clear task-level substitution?

Measurement Innovation:

- Extract 1M+ firm-specific AI applications from LinkedIn resumes using LLMs
- Compute semantic similarity to O*NET tasks (GTE embeddings)
- Construct *firm-occupation-time* varying exposure with two moments:
  - **Mean exposure**: average AI exposure across occupation's tasks
  - **Concentration of exposure**: variance of exposure across tasks
- **Key advantage**: Same occupation, different firms $\rightarrow$ different exposures
  - Enables Firm$\times$Year *and* Occupation$\times$Year fixed effects
  - Prior work: only cross-occupation variation

Main Findings and Contribution

Main Empirical Findings (IV estimates):

- **IV approach:** using firms' pre-existing university-hiring network (Babina et al. 2024)
- **Task level**: AI-exposed tasks see 4.8% decline in skill demand
- **Occupation level**: Three countervailing forces on employment
  1. Mean exposure $\rightarrow -14.5\%$ (direct substitution effect)
  2. Concentrated exposure $\rightarrow +7.5\%$ (task reallocation benefit)
  3. Firm AI-adoption benefit $\rightarrow +17.2\%$ (productivity effect)
- **Net aggregate employment effect**: Small, heterogeneous across occupations

Contribution to Literature:

- Reconciles task-level substitution with muted aggregate employment effects
- Shows *concentration* of exposure matters, not just mean exposure
- Provides granular, firm-specific AI adoption measures for future research

Takeaway: Very innovative; High potential impact; R&R at QJE

Overview

Evaluate this work by nesting it into recent advances in "technology and labor" literature

The classic "task-based" model (is not satisfying)

- **Tasks** are atomic units of work
- **Occupations** bundle tasks together
- Each task assigned to either labor OR capital by **comparative advantage**

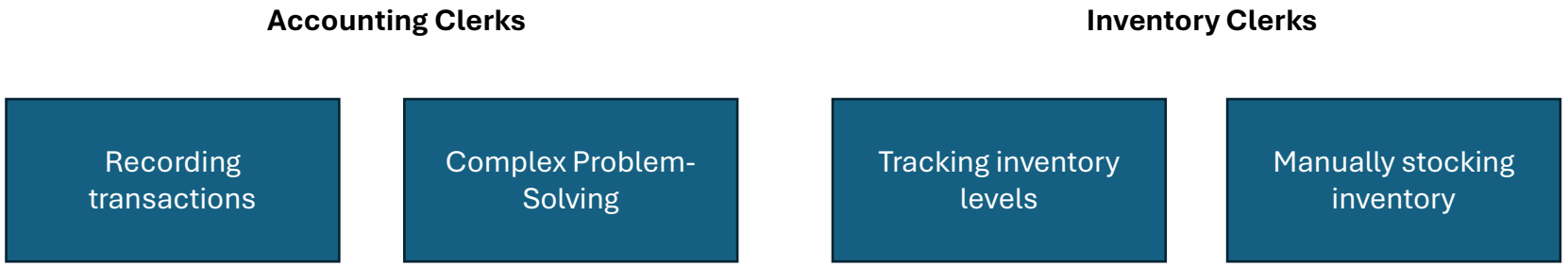
Predictions on occupations

- Task-displacement by automation = Occupation-displacement by automation
- A quantity model: for an occupation, more tasks exposed means more tech-substitution

Key limitation

- Oversimplify task-occupation relationship Does not explain task reallocation:
- e.g., AI replacing proof-reading, professors focus more on knowledge generation
- e.g., AI replacing coding, programmers focus more on debugging and innovation

Recent Advancement in Tech-Labor Literature



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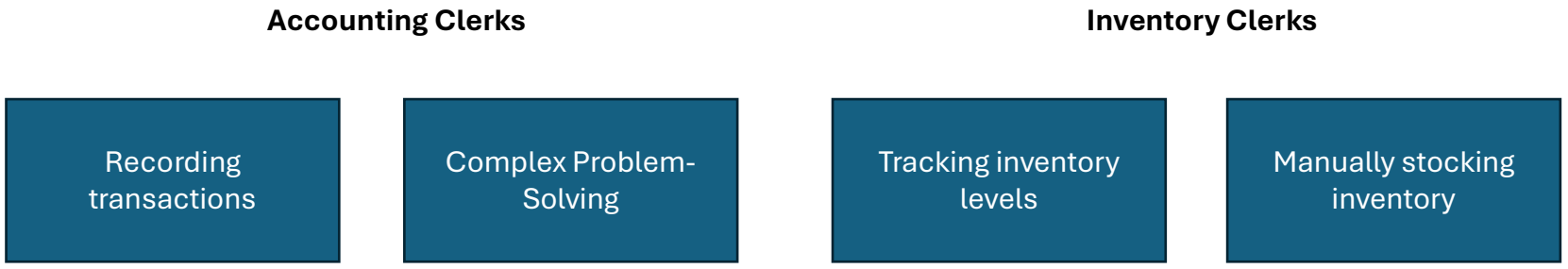

Classic "Task-based" Model:

- **Quantity model:** no differentiation on the "importance" of tasks for an occupation
- **Binary automatability:** A task can be either AI-replaced or not
- **No within-occupation task reallocation:** When some tasks are automated, other occupation may take away the rest of your tasks

Recent Advancements (illustrated by comparing 3 papers):

- Hampole, Papanikolaou, Schmidt, Seegmiller (2025)
- Autor and Thompson (JEEA 2025)
- Esfieldt, Schubert, Taska, Zhang (JF 2025)

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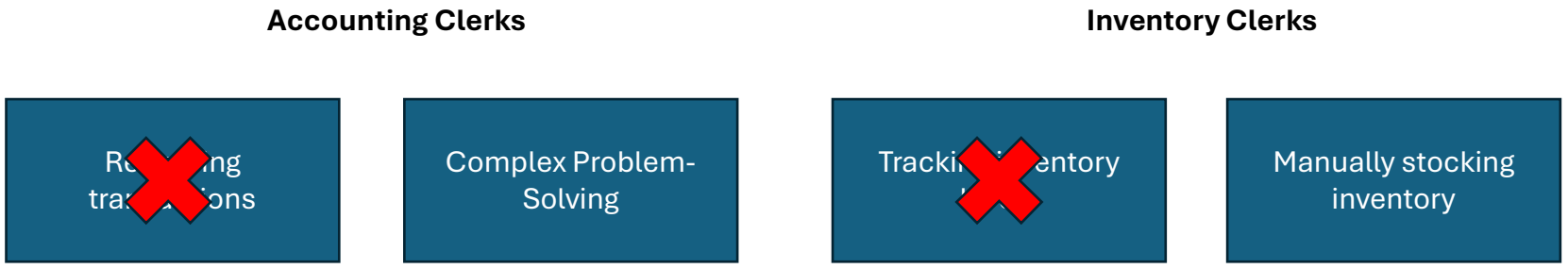

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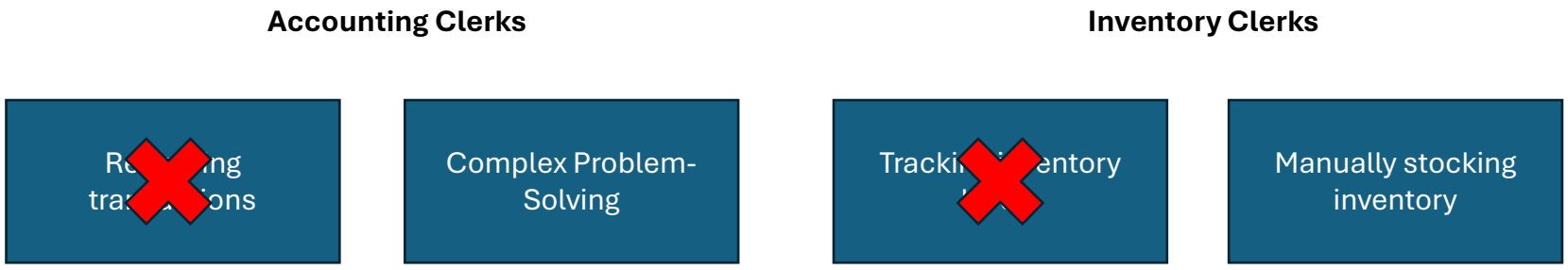


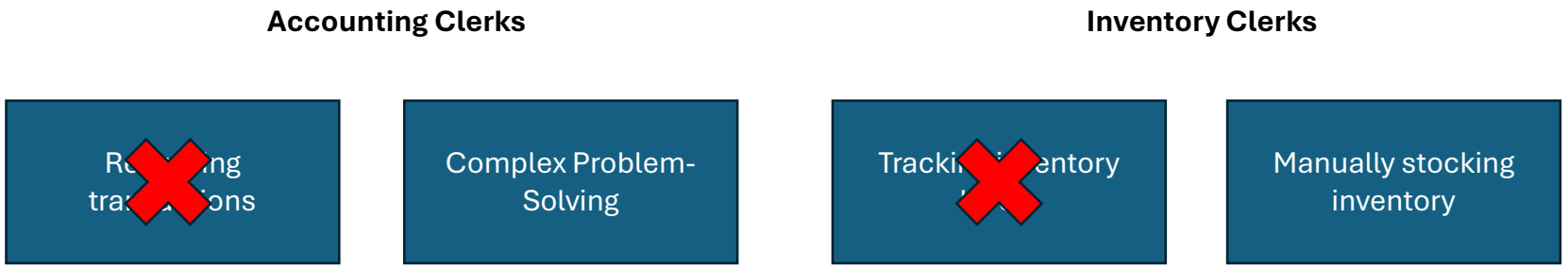
Advancement by Hampole et al.:

- **Quantity model:** no differentiation on the "importance" of tasks for an occupation
- **Non-Binary firm-specific automatability:** The same task can have different AI-exposures across different firms (Innovative!)
- **Allow for within-occupation task reallocation:** When some tasks are automated, workers shift to other tasks

New Insights: Not just mean exposure, but concentration also matters!

	AI Exposure by Task					
Occupation	Task 1	Task 2	Task 3	Task 4	Mean	Concentration
Occ 1 (Diffuse exposure)	0.25	0.25	0.25	0.25	0.25	0.00
Occ 2 (Concentrated exposure)	0.50	0.50	0.00	0.00	0.25	0.0625

Advancement by Autor and Thompson (2025)



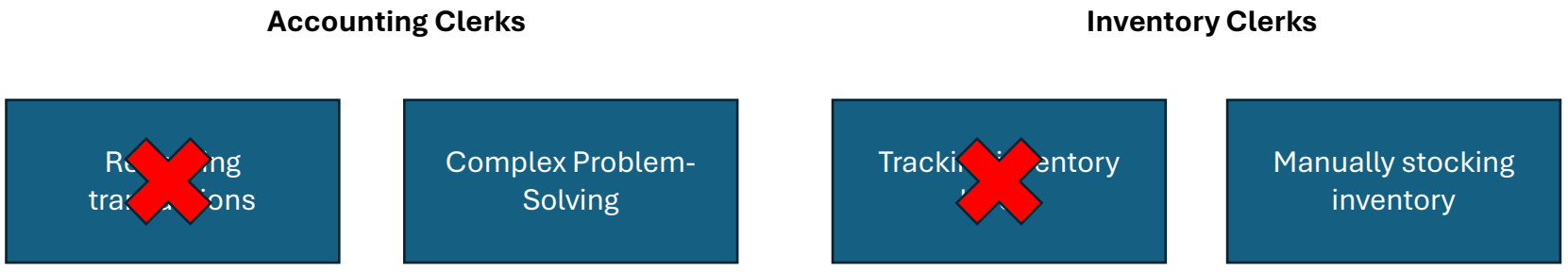
Advancement by Autor and Thompson:

- **Expertise model:** Differentiating harder and easier tasks within-occ
  1. Rank occupations by expertise using language model (Efficient Coding)
  2. Complex Prob-Solving $>$ Recording/tracking transactions $>$ Manually stocking
- **Binary automatability:** A task can be either AI-replaced or not
- **Allow for within-occupation task reallocation:** When some tasks are automated, workers in the occupation focuses on the rest of tasks

New Insights: Not just mean exposure, but "expertise" exposure also matters!

- Accountant clerks focus on prob-solving; inventory clerks focus on manual stocking
- **Wage:** Accountant clerks $\Uparrow$; Inventory clerks $\Downarrow$
- **Employment:** Accountant clerks $\Downarrow$; Inventory clerks $\Uparrow$

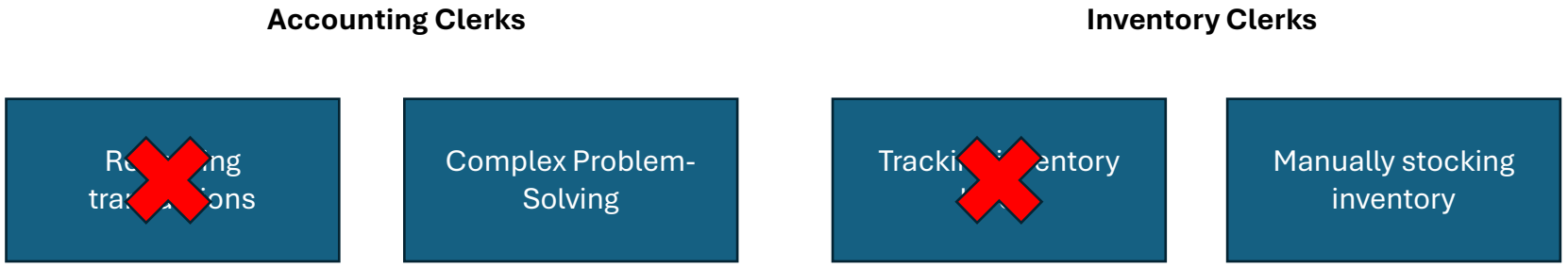
Advancement by Autor and Thompson (2025)



Some current limitations of Autor and Thompson approach:

- Forbidden cross-occupation task reallocation
- Wage and employment may not always go in opposite directions
- Does not account for firm-specific tech-exposure as in Hampole et al.
- Measurement of expertise: rely heavily on word frequency and entropy "Big Data" or "Deep Learning" can be categorized as low expertise

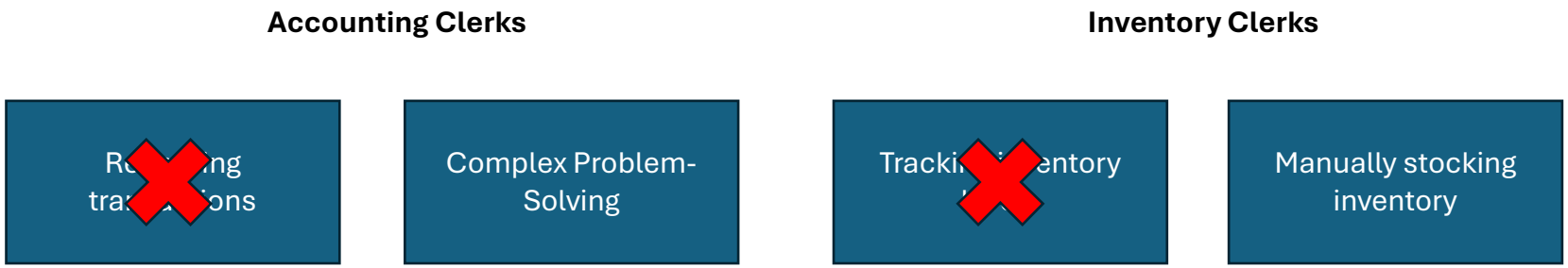
Advancement by Esfieldt et al. (2025)



Advancement by Esfieldt et al:

- **Core/Supplemental model:** Differentiating core versus supplemental tasks within an occupation
  1. Core tasks: dictating your job's main accomplishment
  2. Supplemental tasks: some tasks you have to do but not vital
- **Binary automatability:** A task can be either AI-replaced or not
- **Allow for within-occupation and across-occupation task reallocation:**
  1. If your core tasks are displaced by AI, you can either focus on the supplemental or be completely wiped out (copy editors)
  2. If your supplemental tasks are displaced by AI, you are complemented as you can focus more on your main accomplishment

Advancement by Esfieldt et al. (2025)



New Insights: Not just mean exposure, but core/supplemental exposure also matters!

- Core-task GenAI exposure $\longrightarrow$ Technology substitute the occupation
- Supp-task GenAI exposure $\longrightarrow$ Technology complement the occupation
- Paper shows supporting evidence using job posting/employment/wage!

Pros and Cons:

- Easier to measure core/supplemental than expertise
- Account for task-occupation relationship (not a quantity model)
- Does not account for firm-specific tech-exposure as in Hampole et al.
- Does not explain in 1980-2000, routine occupations' employment decline by wage does not (although supported by recent GenAI evidence)

What is next?

All three approaches (and others) are trying to figure out the "elephant"

- They all have their distinct merits over the classic task-based model
- But have limitations as well

Follow-up questions and advancement?

- How much does making occupations' AI exposure "firm-specific" help explain the data?
- How does wage respond to mean exposure and concentration?
- Conditions for expertise/core/concentration matter? Maybe for some technologies, expertise matter (e.g., low-AI automation) but for other technologies, core and concentration matter (e.g., AI, GenAI).

Massive space for advancement; An interdisciplinary area for labor & finance research.

Conclusion

This is a very innovative piece that moves the field!

- Novel measure: Firm-specific exposure; A new concentration measure.
- Striking results: Muted impact of AI on employment: While mean exposure leads to substitution, concentration captures the reallocation that mutes the impact

My thoughts focuses on what's next

- This paper among recent papers can help deepening our understanding of AI on jobs.
- Highly recommend!