

Discussion of “Now Hiring: Firm-Level Adoption of Generative AI in China” by Li, Liu, Wang, Wang, and Yu

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The paper, in brief

- **Question:** How fast, and how unevenly, is GenAI diffusing across Chinese firms, and which firms go first?
- **Data:** 72M job ads, 2015–2025, matched to ~5,000 listed firms (Wind annual reports; 51job, Zhaopin, Liepin) and ~2.5M private firms (business registry; 51job only)
- **Design:**
 - Leverage rich text in online job ads
 - Bilingual keyword lists (GenAI tool / GenAI tech / earlier AI)
 - A firm "adopts" at its first GenAI-skill ad
 - Report adoption curves plus cross-sectional correlates
- **Findings:**
 - 21% of listed vs. 0.17% of private firms by end-2025
 - Sharp jump after DeepSeek introduction
 - High uneven; size, market services, and prior earlier-AI ads predict adoption
 - Mentions of specific tools extend beyond ICT jobs; mentions of GenAI terms (LLM, RAG, etc.) stay in them

Strengths

- **Understudied and important context!**
- **Make-vs-buy distinctions** (particularly with plummeting costs of adoption via chatbots)
- DeepSeek is a **distinct shock** from ChatGPT
- **Critical survey** of the literature
- **Firm-level** approach

Table 1: Measurement Approaches to AI and GenAI Adoption

Measurement approach	Representative studies	What the measure mainly captures	Main advantage and limitation
Survey-based	McElheran et al. (2024); McElheran et al. (2025); Bick, Blandin, and Deming (2025); Bonney et al. (2026); Yotzov et al. (2026)	Self-reported AI use by firms, establishments, executives, or individual workers	Provides direct and interpretable evidence on reported use. Estimates are sensitive to the technology covered, question wording, sampling frame, weighting scheme, and respondent type. Worker surveys additionally capture individual use rather than formal firm adoption.
Patent-based	Cheng, Lee, and Tambe (2023); Calvino et al. (2022)	AI invention, technological development, or commercialization by firms	Provides an objective signal of innovative activity. Identifies AI developers or innovators rather than ordinary firms adopting externally supplied AI tools.
Self-disclosure-based	Calvino et al. (2022); Yao et al. (2024)	AI-related strategic orientation, public communication, investment intentions, or market signaling	Offers broad coverage and can be linked to firm outcomes over time. AI-related text may contain strategic rhetoric or forward-looking statements.
Job-posting-based	Calvino et al. (2022); Alekseeva et al. (2025); Shi et al. (2025); Hosseini and Lichtinger (2025)	Firms' observable investment in AI-related human capital and efforts to integrate AI into organizational functions	Captures function-specific organizational action at relatively high frequency. May miss adoption through off-the-shelf tools, external providers, or existing employees; vacancies may reflect intended rather than realized implementation.

“Firming up AI Diffusion”

- Productivity and Labor market impacts are going to run through firms (e.g., “Firming in up Inequality” by Song et al. 2019)
- Decisions over job design and complementary investments taken at firm-level (e.g., Arntz et al. 2017)
- What goes on inside firms is complicated and hard to measure
 - Extensive margin “use”
 - Intensive margin “deployment”
 - Breadth
 - Complements
 - Pre-requisites

Firming Up AI Diffusion

What Counts as Adoption, and Why It Runs Through Firms

Proposal for the Journal of Economic Perspectives symposium on AI diffusion

Kristina McElheran, University of Toronto. September 2026.

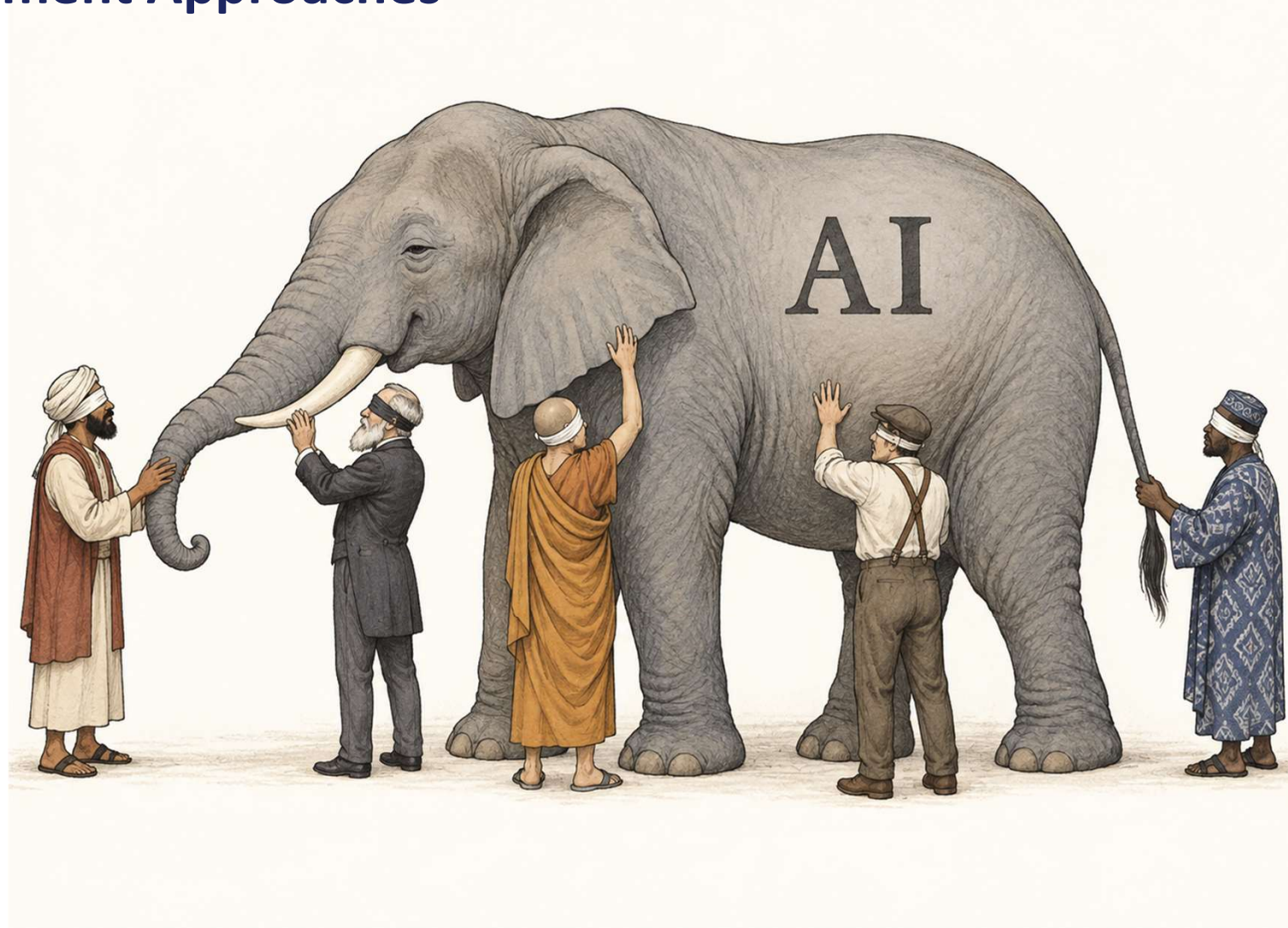
The question and the confusion

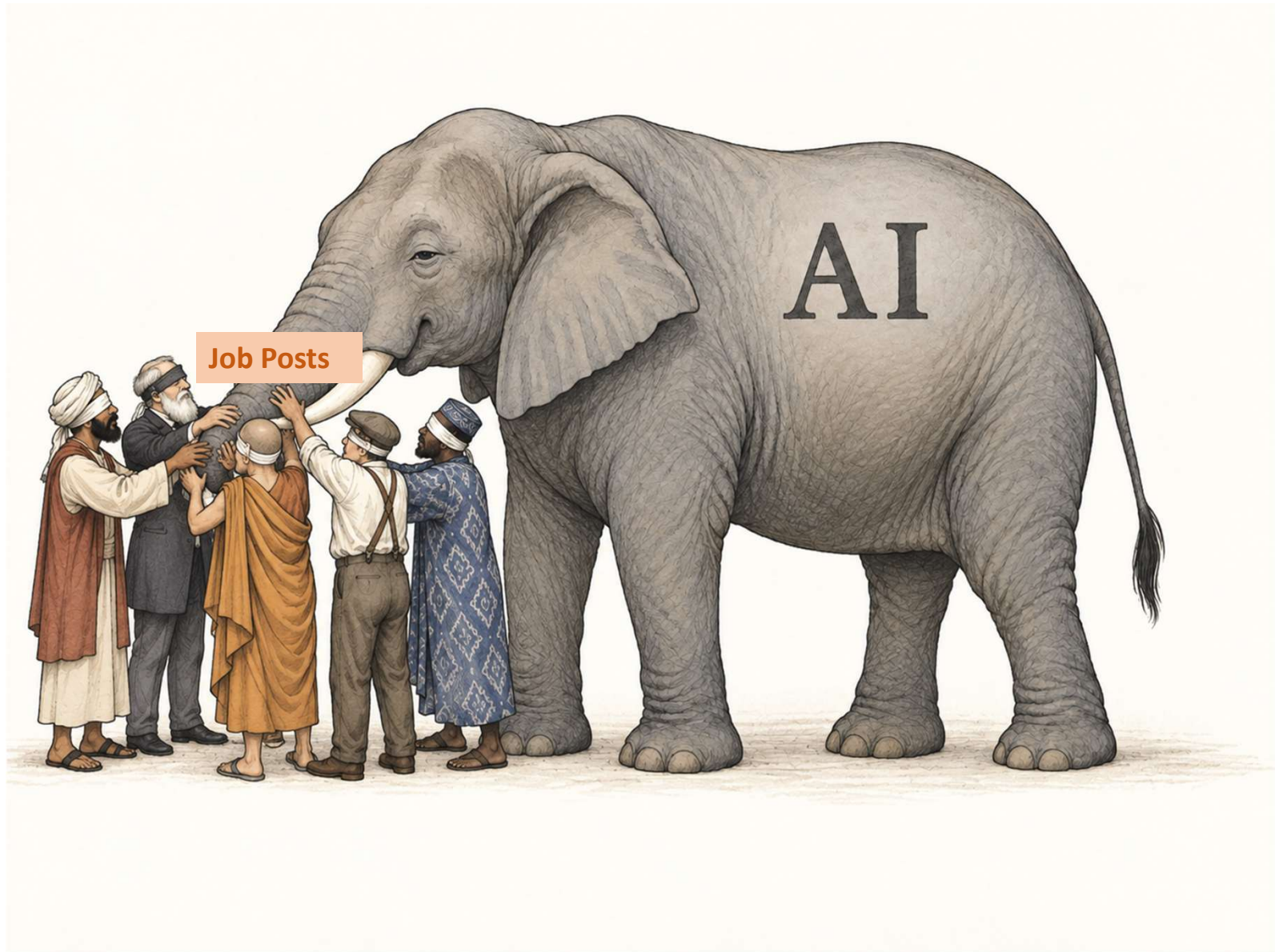
What is the state of AI diffusion in the United States? Trying to answer this question evokes the parable of the blind men and the elephant: it depends on which part of the beast you have hold of. One view claims that AI is being deployed everywhere and is already changing work and life as we know it. Another reports that meaningful adoption has been slow, uneven, and a fraction of what the enthusiasts claim. Increasingly, a third view places the truth in the middle: AI use is everywhere but its economic effects are lagging, reprising the Solow paradox of the 1980s. Surveys fielded in the past year put adoption among U.S. businesses anywhere from about 20 percent of firms to more than 75 percent, and each figure has been cited as the adoption rate.

Even experts struggle to adjudicate these claims and the statistics that accompany them. Much of the confusion has roots in the initial question, is watered by managerial, financial, and policy urgency, and is shaped by data limitations. I have been involved in addressing the last of these, through the Census Bureau surveys that measure technology use in U.S. businesses, which gives me a view of both the phenomenon and the confusion surrounding it.

The argument

Different Measurement Approaches





Adoption rates are fractions

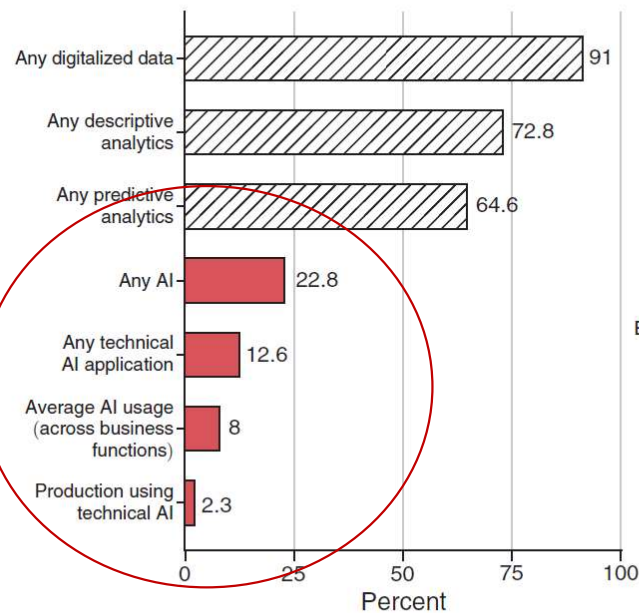
- All adoption rates are numerators over denominators
- Some “disagreement” is about the numerator, and we have to keep straight what kind of “adoption” we are talking about
- A lot of it, however, is about denominators:

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THE ADOPTION OF INDUSTRIAL AI IN AMERICA

23

Panel A. Industrial AI usage, 2021



Panel B. Barriers to industrial AI adoption, 2021

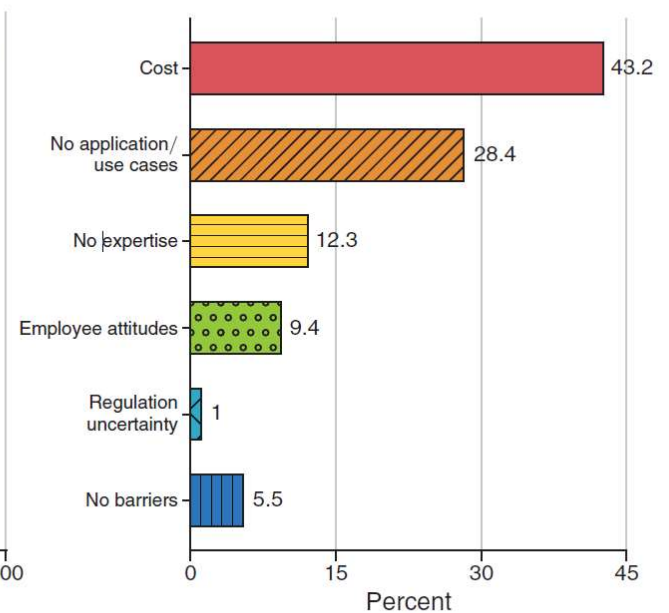


FIGURE 1. INDUSTRIAL AI USE AND BARRIERS FROM THE 2021 MOPS

Three Denominators

firms with ≥ 1 GenAI job ad

?

Which firms?

$\approx 4\%$

of registered enterprises are in the private-firm sample

- Firms that stopped posting appear to stay in the denominator

How many chances?

5

the median private firm that never “adopts” posts 5 ads in 11 years

Per ad: **listed 3.5× more likely**

Per firm: **120× more likely**

vs. private firms

Need to disentangle adoption from posting

Which jobs?

1.76M $\rightarrow$ 0.86M

listed-firm job ads, 2022 $\rightarrow$ 2025

- Online, white-collar hiring
- 3 boards for listed firms, 1 for private firms
- Whither manufacturing labor?

“Composition” hinges on this

What is the AI Doing?

Market services

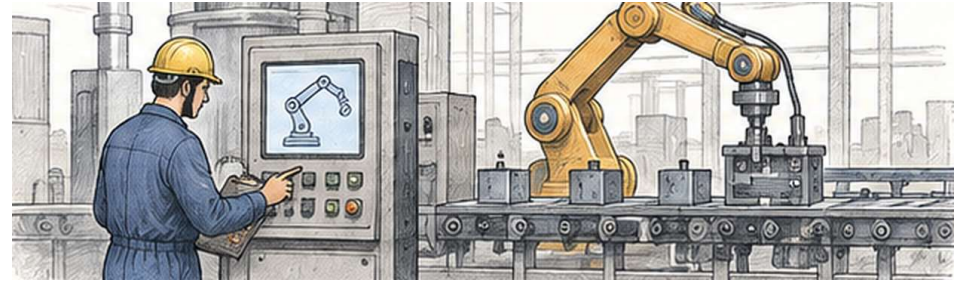


- The job ad sits close to the adoption: white-collar tasks, visible workflows
- Postings are probably most informative here

35%

posted a GenAI ad

Manufacturing



- The AI is in the equipment: machine vision, robotics, process control, vendor software
- It rarely shows up in a GenAI job ad

53%

posted an earlier-AI ad

0.9%

posted a GenAI ad for production

Vacancy composition $\neq$ workforce composition

Share of listed firms in each sector posting at least one such ad by end-2025. Li et al. (2026), Figs. 7, 14, A7. Illustrations: ChatGPT.

The Problem of Yellow Bananas (Aubert et al. 2026)



- Diffusion over time really matters for the DGP
- Routine skills go missing over time
- Mentions reflect salience and scarcity
- Keyword frequency may be non-monotonic (rise early and then fade as skills become ordinary)
- Vocabulary evolves

The Daily Chronicle March 27, 1995

Office Administrator

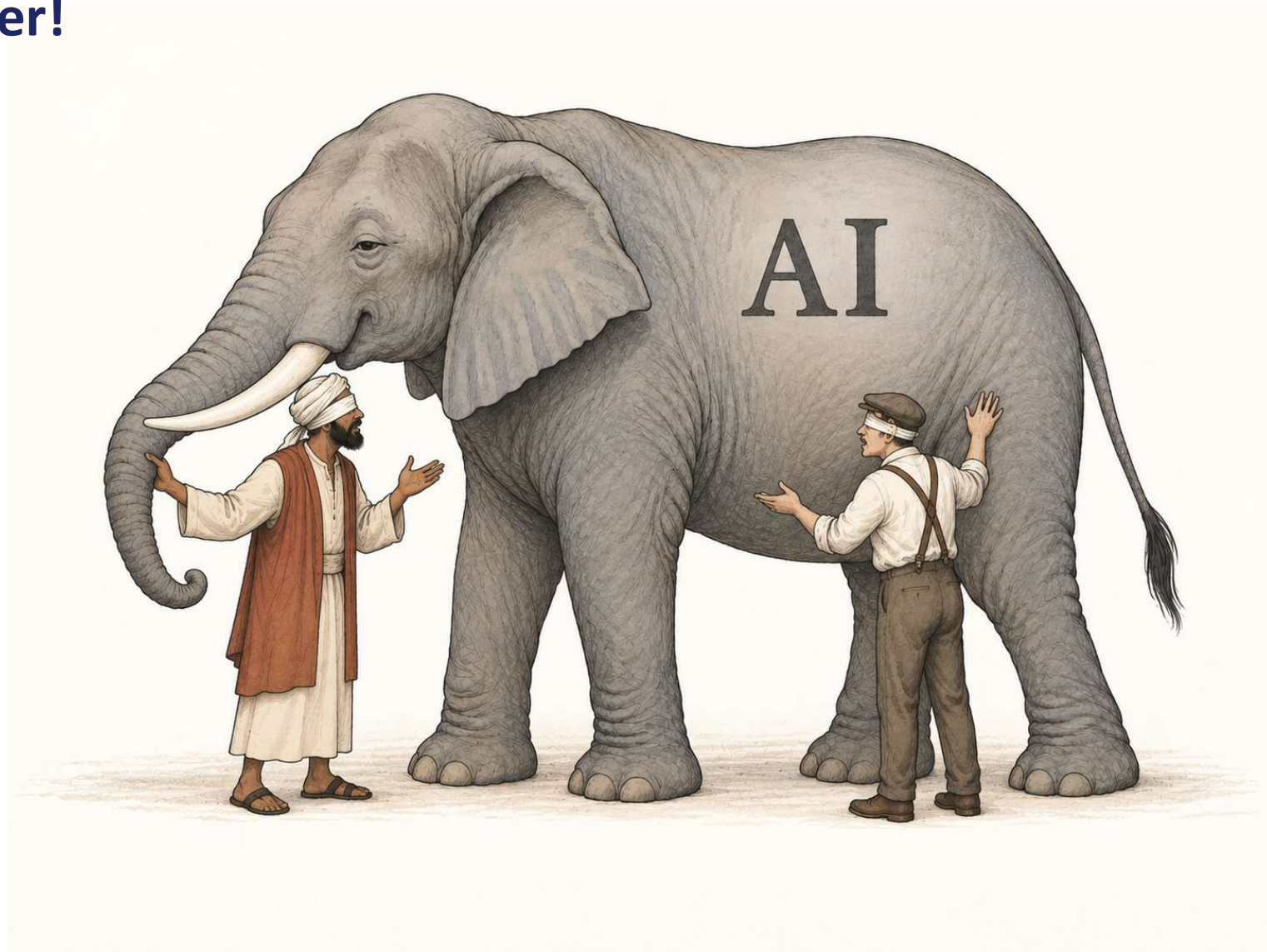
Key Qualifications:

- Proficient in electronic mail (e-mail) using Eudora (preferred) or other mail clients
- Experience with Netscape Navigator and the World Wide Web
- Ability to conduct online information searches
- Familiarity with Microsoft Word and Excel
- Comfortable using the Internet for business communication



Sources: Sostero and Tolan (2022), Atlas (2000), Gallivan, Turex and Kvansy (2004), **Atalay et al. (2020)**

Let's help each other!



Suggestions

- **Make the gap the finding:** surveys vs. job ads may be more about the “how” of AI adoption than the “how much”
- **“Costly and Observable”** – how costly is it to post a vacancy in this context? How costly is it to mention GenAI? How much are they expecting and paying for this set of skills?
- **Turn the Section 2 lens on this work, as well:** Social desirability in surveys but not in job postings? (Tambe et al. (2020) find evidence of “Paying to Program”). Critique of Shi et al.'s posting measure applies here?
- **Adjust for size:** if a firm “adopts” with a single ad, and non-listed firm size is the number of ads, then size and chances-to-adopt are the same thing.
- **Test for “pencils”** (DiNardo and Pischke 1997): use “Gen AI” keywords prior 2022 and check for false-positives.
- **Add nuance about different types of AI and how they enter the production function.** “Industrial AI” is buried in Figure A7: machine vision, computer vision, pattern recognition reaches 53% of listed manufacturing firms. That is the right comparison to form with the 2021 MOPS statistics (McElheran et al. 2025)

Summary

- A great question
- A rich empirical setting
- Lean into the apparent “gaps”
- Excited for the conversation to come!

Thank you!

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Nits

- Deduplication deserves less in-body attention: “ever adopted” is invariant to duplicates. This only matters for intensity and counts, but those are already subject to such severe concerns, I would drop that.
- Figure 6 event time uses a 2015 start, but the text uses 2010.
- Figure 11's SOE gap sits alongside an insignificant SOE coefficient in Table 2.
- Housekeeping: 2.5M vs. 2.8M firms, "??" references, and two different WDR titles