

# Lecture 16: Knowledge as Compensation

Compensation in Organizations

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## Discussion

**Garicano and Rayo (2025)**  
(Not Yet Published)

## Discussion

**Garicano (2025)**  
(Blog Post on Silicon Continent)

## Medieval Apprentices and Generative AI?

- ▶ Smart people are willing to do grunt work. What are examples?
- ▶ It is hard to get firms to provide general training to workers. Why?
- ▶ How does this connect to medieval apprenticeships?
  - ▶ Entry-level workers reap the gains of training through future wages.
  - ▶ Entry-level workers do not have the money to pay for training today.
  - ▶ So they pay for training via grunt work.

## Transferring Knowledge

- ▶ Time is continuous and infinite:  $t \geq 0$ .
  - ▶ Both the firm and the worker exponentially discount the future at rate  $r$ .<sup>1</sup>
  - ▶ Expert E commits to wage path  $\{w_t\}$  and knowledge transfer path  $\{x_t\}$ .
    - ▶ Starting knowledge is 0, maximum is 1, knowledge cannot decrease.
  - ▶ The Apprentice's output at time  $t$  is 0 if  $x_t < \theta$ , and  $(x_t - \theta)$  otherwise.
  - ▶ While employed, the Apprentice A gets the discounted flow of wages.
  - ▶ Apprentice decides a time to quit  $\tau \geq 0$ , they work for themselves and receive the discounted flow of their output forever after.
  - ▶ The expert gets the discounted flow of output less wages while the worker is employed, and 0 after.
1. Do not worry I will show what this means.

## Transferring Knowledge: Adding Generative AI

- ▶ Where was AI?
- ▶ The parameter  $\theta$  represents the level of generative AI.
- ▶ As  $\theta$  rises AI can perform more of the basic knowledge tasks.
- ▶ The expert and apprentice cannot sell tasks that AI can do. Why?

# The Apprentice Becomes the Expert!

## Theorem 1

During a training period that lasts from  $0 \leq t \leq \frac{1}{r}$ , the apprentice receives 0 wages ( $w_t = 0$ ) and knowledge is transferred:

$$x_t = \theta + (1 - \theta)e^{-1} \exp(rt).$$

From  $\frac{1}{r}$ , all knowledge has been transferred ( $x_t = 1$ ) and the apprentice is paid all output  $w_t = y_t = 1 - \theta$ .

- ▶ The apprentice stays for 0 wages initially! Why?
- ▶ The apprentice is given an immediate burst of knowledge. Why?

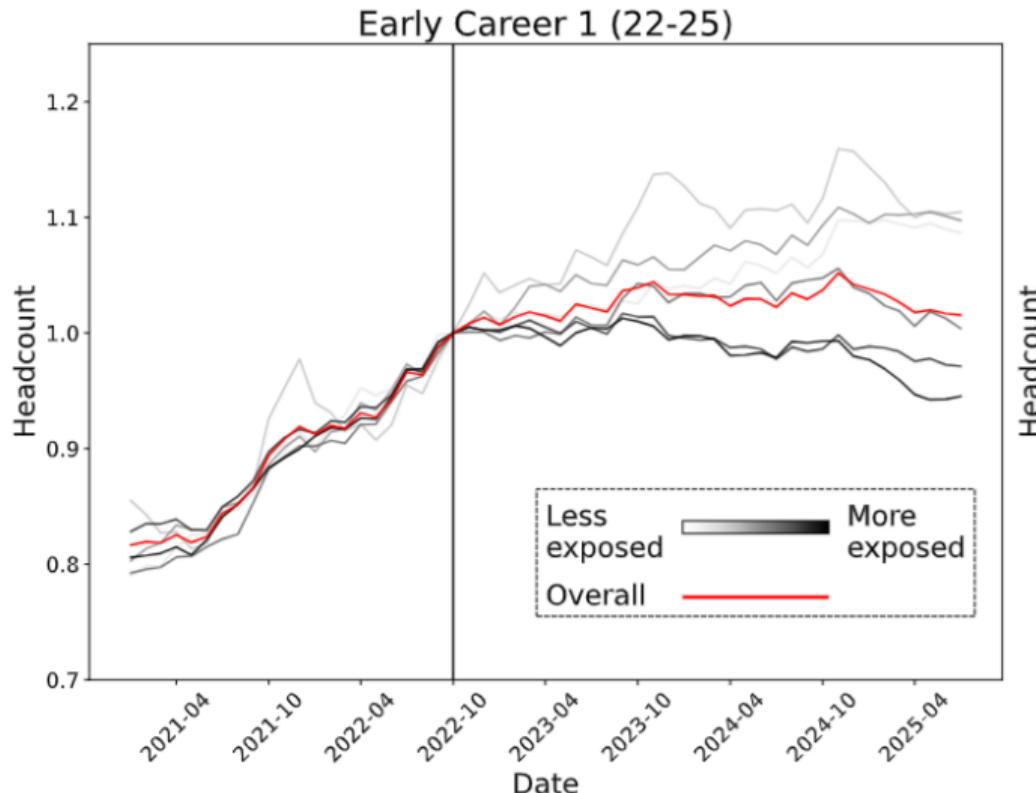
## Generative AI and the Old Training Model

- ▶ Profit for the expert from training the apprentice is given by:

$$\Pi = \frac{1 - \theta}{r \cdot e}$$

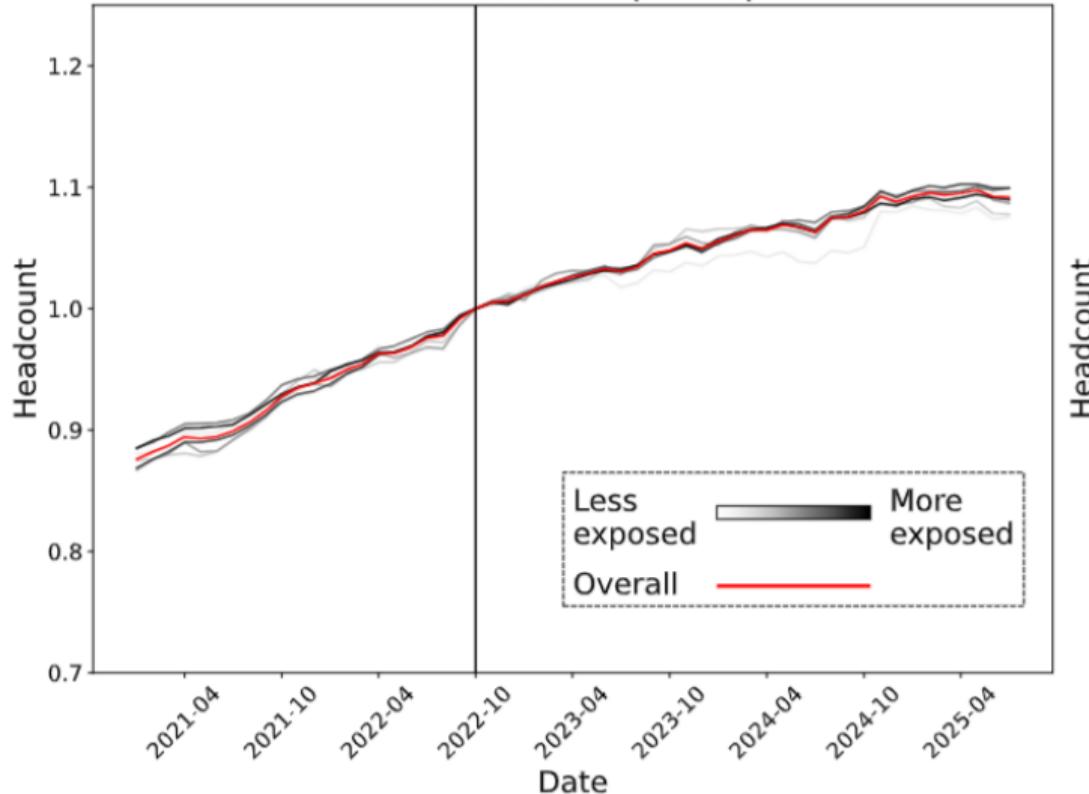
- ▶ As  $\theta$  rises, profit falls, eventually converging to 1 when AI reaches the expert.
- ▶ Entry-level workers benefit through wages from general training/knowledge.
- ▶ The old “deal” was that entry-level workers did menial work for cheap in exchange for training.
- ▶ This grunt work compensates the expert for the training.
- ▶ AI destroys this paradigm.

# Employment Growth and AI Exposure: Early Career



# Employment Growth and AI Exposure: Mid-Late Career

Mid-Career 2 (41-49)



"Canaries in the Coal Mine?" by Brynjolfsson, Chandar, Chen (2025)