# Lecture 16: Knowledge as Compensation

Compensation in Organizations

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

# 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 $r$.[1]

- ▶ 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?

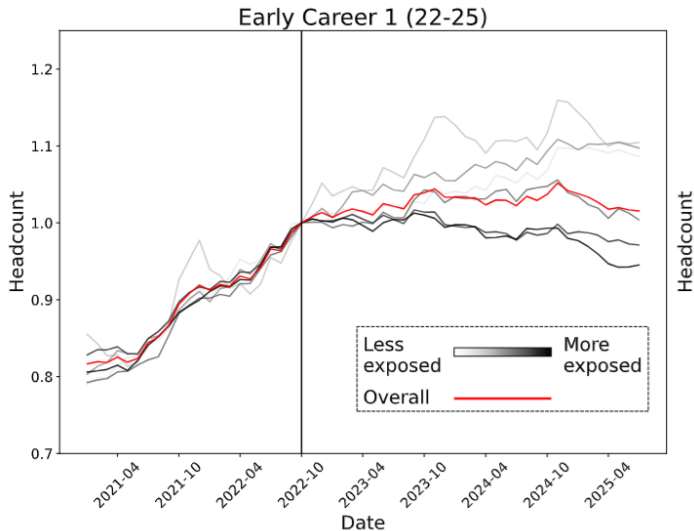▶ The apprentice is given an immediate burst of knowledge. Why?

# Generative AI and the Old Training Model

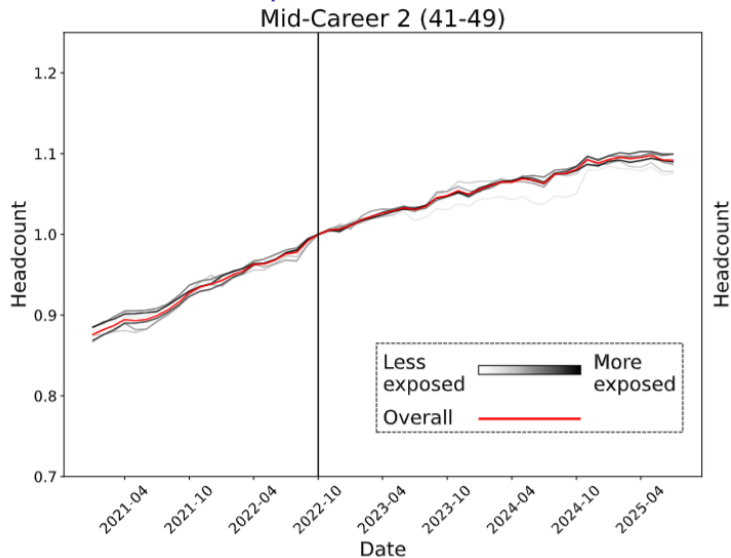- ▶ Profit for the expert from training the apprentice is given by:

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

- ▶ 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



Early Career 1 (22-25)

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

# Employment Growth and AI Exposure: Mid-Late Career



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