

Technology and Labor Markets: Past, Present, and Future; Evidence from Two Centuries of Innovation

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Managing the Future of Work

Potent piece of work

- Something for everyone...
 - Important topic
 - Rigorous theoretical model $\leftrightarrow$ Empirical estimation
 - Frontier LLM data development
 - Applications to near-term AI
- Comments...
 - A few dutiful notes
 - Conceptual considerations on occupations and tasks
 - Worker-level evidence on declining occupations
 - A final thought on AI and robotics

Dutiful notes

- *Frontier* LLM:
 - Devil in details (occ#), replication, time leakage/circularity
 - Worry most about 1800s data... heroic techniques
 - Run adversarial models, randomized human validation
- Empirical
 - Continued depiction of metrics: serial and cross-correlation
 - Continued attention to exclusion restriction / leave-out tests
 - Perhaps complement with more non-patent data
 - Future: pace of tech change, diffusion, radical change

Task framework is often a great lens



Source: Agility Robots; Axios; Kernel.

Occupation definitions matter

- “Retail sales clerks”
 - Some occupations are quite broad
 - Higher level than video rental woes
 - Framework captures well
- “Miner”
 - Contrast to “energy extraction worker”
 - Picks up local tech change very well
 - Occupation’s fate depends even more on tech change in other energy applications



Non-task issues and distances



Source: IONIC Health.

Strategic incentives to close the loop



Source: Google Images

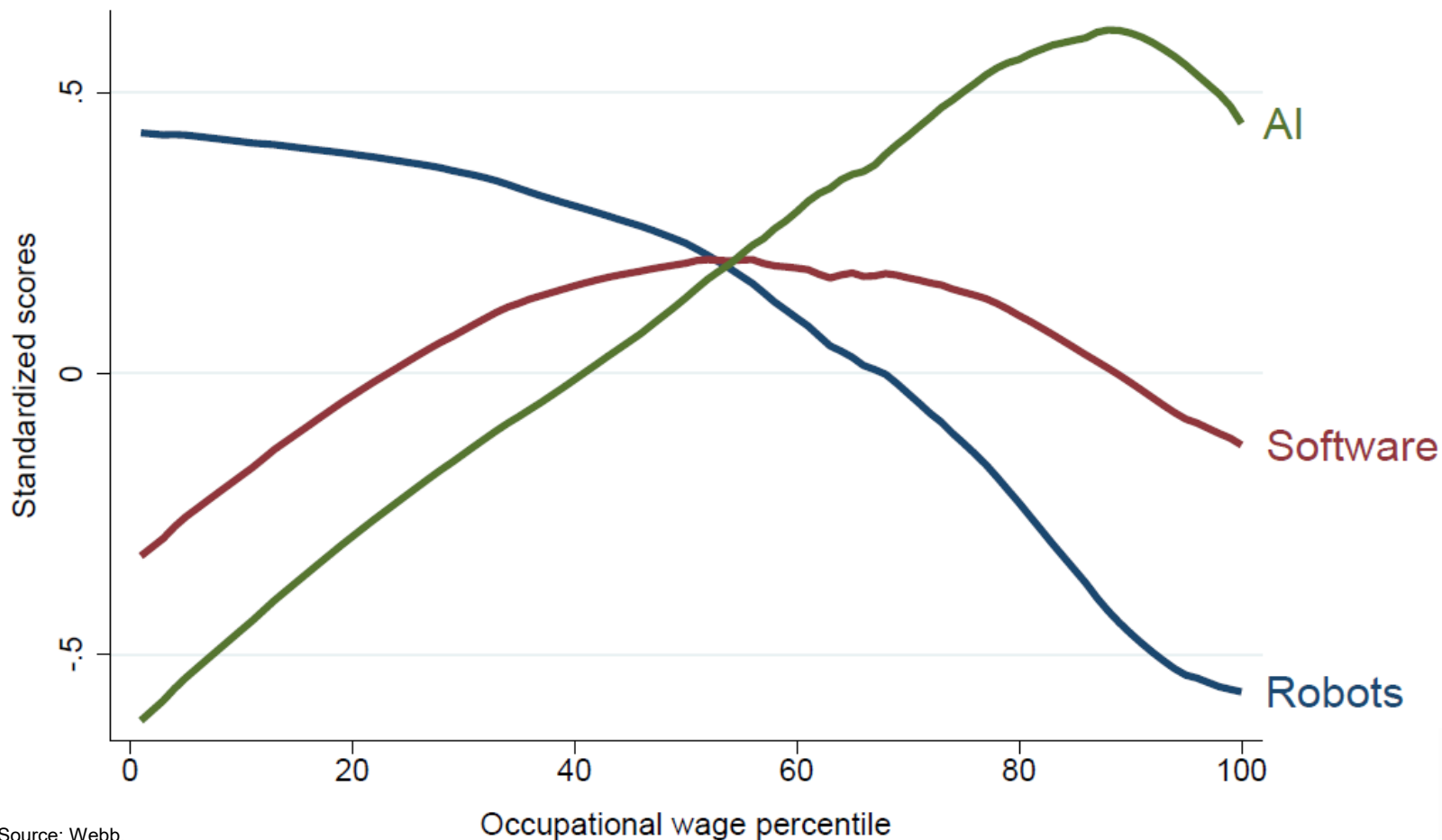
Occupational realignment around new tech



Evidence on labor impacts

- Edin et al. (2023) – Sweden 1986-2013
- Being initially in a declining occupation leads to:
 - 2.1% less cumulative work
 - 5.0% less cumulative earnings
- Larger losses of ~10% earnings for those initially at bottom of declining occupation's earning distributions
- Barth et al. currently replicating for US, with inter-gen shifts

Technology forms and skill levels



How will AI and robotic interact?

