The implications of AI for employment and inequality

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2024 April 25, MERI-BELSPO Conference on R&D, innovation, sustainability, and the societal impact of new technologies

Automation anxiety

'The number of jobs lost to more efficient machines is only part of the problem. What worries many job experts more is that automation may prevent the economy from creating enough new jobs. ... Throughout industry, the trend has been to bigger production with a smaller workforce. ... Many of the losses in factory jobs have been countered by an increase in the service industries or in office jobs. But automation is beginning to move in and eliminate office jobs too. ... In the past, new industries hired far more people than those they put out of business. But this is not true of many of today's new industries. ... Today's new industries have comparatively few jobs for the unskilled or semiskilled, just the class of workers whose jobs are being eliminated by automation.'

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TIME magazine, 1961 February 24

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- **does AI threaten this equilibrium?**

1. it could decrease the number of jobs in which humans are more productive than machines → large unemployment
2. it could reshape job skill demands → a small fraction of workers with highly specialized skills reap all the benefits

Two centuries of automation

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→ David Autor: Why are there still so many jobs?

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discussion typically

- focuses on mechanism **1**
- and ignores or underestimates mechanism **2**, **3**, **4**

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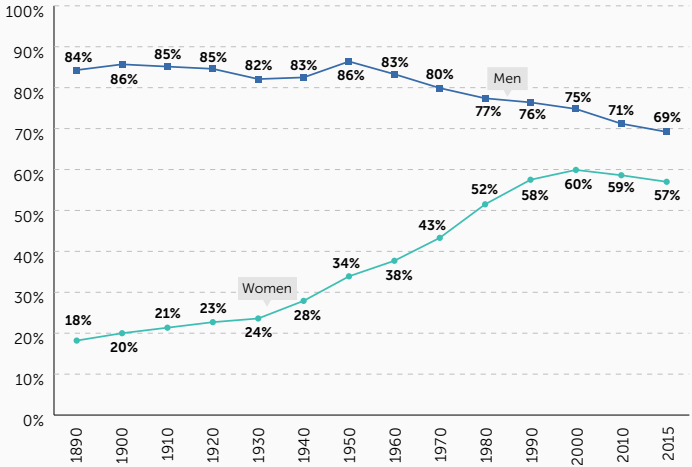
- each of these are necessary

→ improvements in one increase the value of the other

→ Kremer (1993): O-ring production function

O-ring rubber seal which caused the 1986 accident of the Space Shuttle Challenger

Mechanism 3: Increasing labor demand – Tech did not make labor obsolete



employment to population ratio increasing in the US

Source: Autor, Mindell, Reynolds (2020) Figure 1

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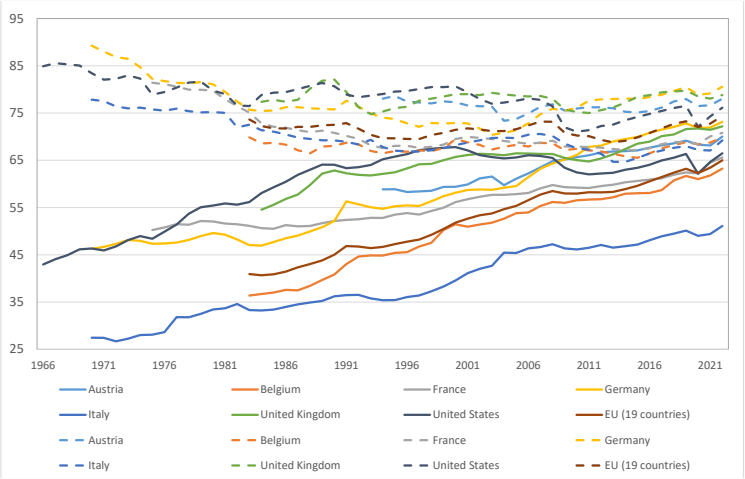
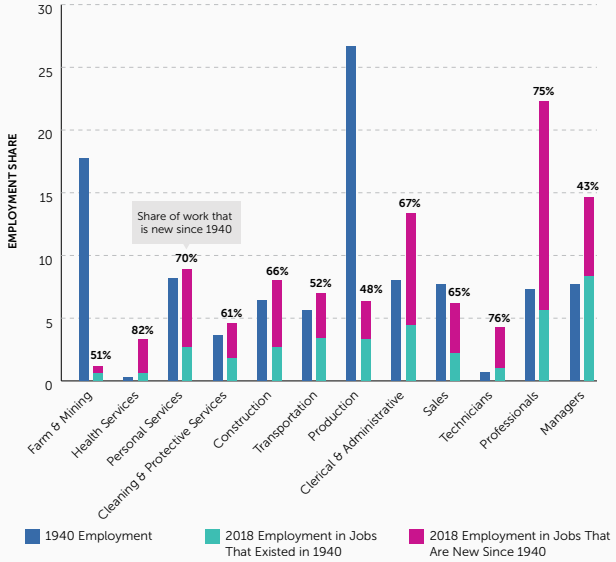


employment to population ratio increasing in OECD countries

Source: OECD Data

Mechanism 4: Creation of new types of jobs



more than 60% of jobs done in 2018 were not present in 1940

Source: Autor, Mindell, Reynolds (2020) Figure 2

Mechanism 4: Examples of new job titles

Table 1. Examples of New Occupations Added to the U.S. Census Between 1940 and 2018

YEAR	EXAMPLE TITLES ADDED	
1940	Automatic welding machine operator	Gambling dealer
1950	Airplane designer	Beautician
1960	Textile chemist	Pageants director
1970	Engineer computer application	Mental-health counselor
1980	Controller, remotely piloted vehicle	Hypnotherapist
1990	Certified medical technician	Conference planner
2000	Artificial intelligence specialist	Chat room host/monitor
2010	Wind turbine technician	Sommelier
2018	Pediatric vascular surgeon	Drama therapist

Source: Autor, Salomons, and Seegmiller, 2020.

driven by

→ new technology

→ new demand

Source: Autor, Mindell, Reynolds (2020) Table 1

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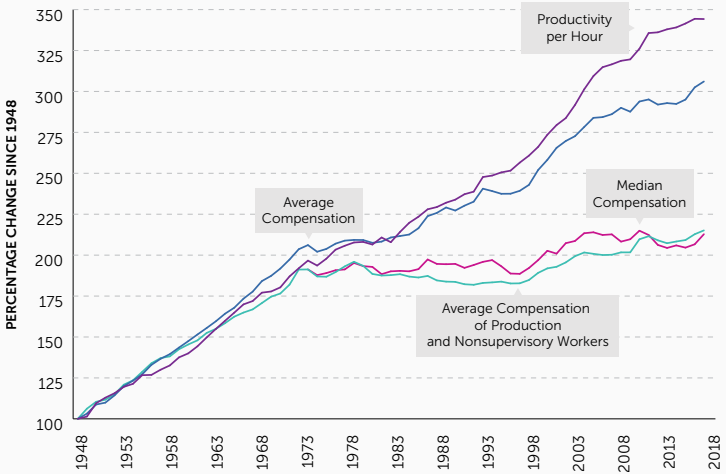
- shared prosperity necessary

→ for mechanism 3: to keep up labor demand

→ for mechanism 4: to have good quality jobs

Prosperity not broadly shared



productivity and real wages are diverging in the US

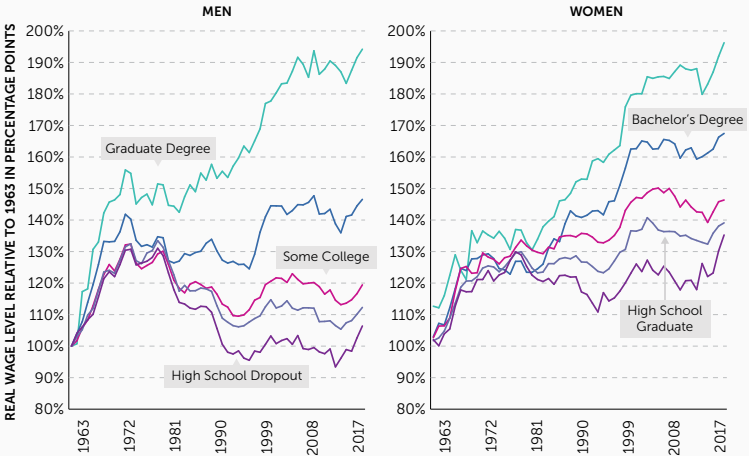
Source: Autor, Mindell, Reynolds (2020) Figure 4

Prosperity not broadly shared

productivity and real wages are diverging in OECD countries

Source: Schwellnus, Kappeler, Pionnier (2018) Figure 2.2

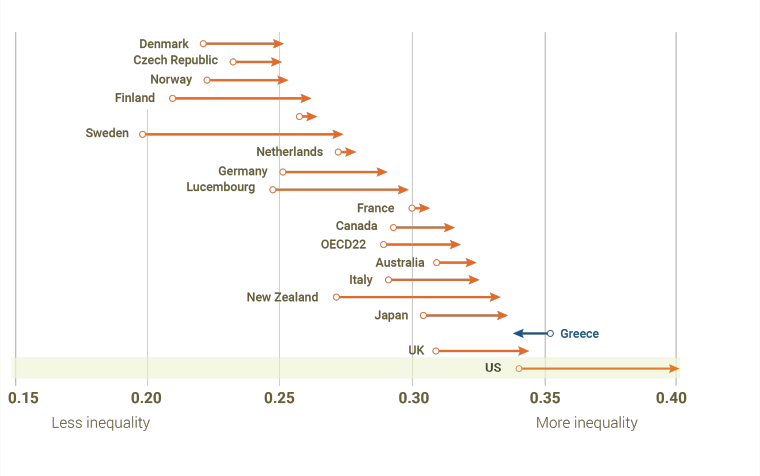
Increasing inequality: Diverging real wages by education



real wages increasing for college grads, falling for lower education since 1980

Source: Autor, Mindell, Reynolds (2020) Figure 3

Increasing inequality: Increasing Gini coefficient



Gini increased almost everywhere 1985-2015

Source: Acemoglu and Johnson (2023), reproduced from OECD (2015) In It Together

When does technology lead to prosperity?

Acemoglu and Johnson: Power and progress

- widespread 'techno-optimism': technological change will benefit everyone

→ productivity bandwagon

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- two key elements for productivity bandwagon to operate

1. technology increases the marginal productivity of workers
2. institutions support worker voice & rent sharing

Productivity bandwagon started to break down from the 1980s

1. technology did not increase worker marginal productivity
   - too much focus on automation, not enough new task creation
   - automation affected lower-educated workers more

2. institutions, environment changed
   - erosion of worker power
   - new corporate vision: sole responsibility of manager is to shareholders

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PROMISE

- some tools can augment the value of human expertise
- AI could enable less expert workers to perform more expert tasks

  physical support, improvement in time and performance

Can AI usher in a new phase of the productivity bandwagon?

1. tech should be developed to complement human expertise rather than devalue it

   machine usefulness vs machine intelligence

   new tasks, better info for workers and decision makers

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⇒ potentially **huge role for policy and for civil movements**

taxes that redirect tech towards worker-augmenting, data ownership & use

Thank you