AI and the Future of Labour Taxation

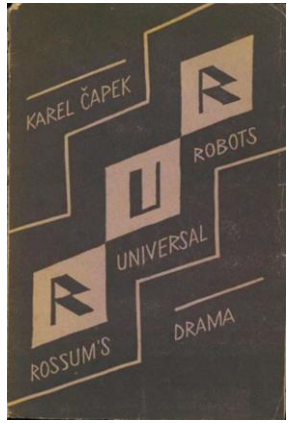
University of Melbourne/IFA
April 2026

Univ.-Prof. DDr. Georg Kofler, LL.M., WU Vienna

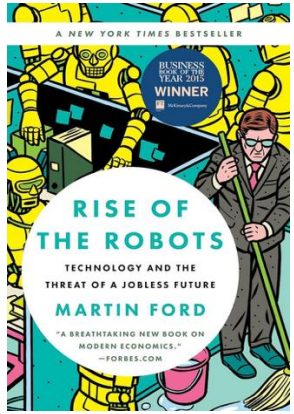
Overview

- ***Part I*** – Impact of Automation on the Labor Market
- ***Part II*** – Implications for Taxation
- ***Part III*** – Utopia or Dystopia?
- ***Part IV*** – Summary

1920

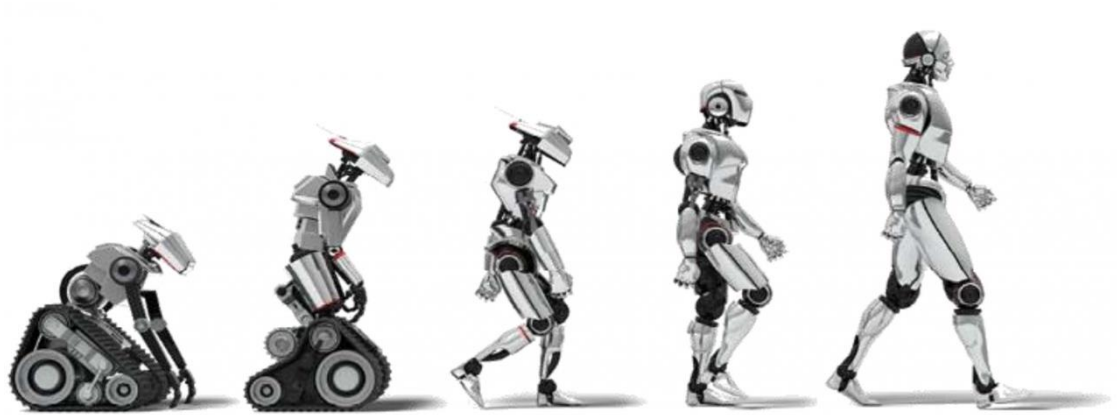


2015



Note: Bibliography at https://koflerge.org/docu/artificial-intelligence/

Part I
Impact of Automation on the Labor Market



Introduction | *Rise of the Robots*

- ***One starting point of the current tax discussion*** → Intro Pts B, K of the Draft Report by the European Parliament's Committee on Legal Affairs on Civil Law Rules on Robotics, A8-0005/2017 (27 Jan. 2017). – Not included in the final European Parliament resolution of 16 February 2017, P8_TA(2017)0051 (16 Feb. 2017).

B. whereas now that humankind stands on the threshold of an era when ever more sophisticated robots, bots, androids and other manifestations of artificial intelligence ("AI") seem to be poised to unleash a new industrial revolution, which is likely to leave no stratum of society untouched, it is vitally important for the legislature to consider its legal and ethical implications and effects, without stifling innovation;

K. whereas at the same time the development of robotics and AI may result in a large part of the work now done by humans being taken over by robots without fully replenishing the lost jobs, so raising concerns about the future of employment, the viability of social welfare and security systems and the continued lag in pension contributions, if the current basis of taxation is maintained, creating the potential for increased inequality in the distribution of wealth and influence, while, for the preservation of social cohesion and prosperity, the likelihood of levying tax on the work performed by a robot or a fee for using and maintaining a robot should be examined in the context of funding the support and retraining of unemployed workers whose jobs have been reduced or eliminated;

"Robot tax" versus
"tax on robots/robot use"

f) creating a specific legal status for robots in the long run, so that at least the most sophisticated autonomous robots could be established as having the status of electronic persons responsible for making good any damage they may cause, and possibly applying electronic personality to cases where robots make autonomous decisions or otherwise interact with third parties independently;

Automation and Labour | *Anxieties*

- ***Anxieties over technology*** (e.g., Mokyr et al, 2015) → ***"The Pessimist's Fears" versus "The Optimist's Complaint"***
  - ***Concern #1:*** Technological progress will cause widespread substitution of machines for labor, which in turn could lead to technological unemployment and a further increase in inequality in the short run, even if the long-run effects are beneficial → Technological unemployment "due to our discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour" (Keynes, 1930)
  - ***Concern #2:*** Moral implications of technological process for human welfare, historically the dehumanizing effects of work (particularly the routinized nature of factory labor), currently the elimination of work itself is the source of dehumanization
  - ***Concern #3:*** Insufficient technological progress (economic and productivity growth) in the face of "headwinds" facing western economies (e.g., slow productivity and population decline)
- ***(Imperfect) Taxonomy → Human versus machine***
  - ***Physical Strength*** → Industrial Robots → Exposed for decades (and impact on labor markets reasonably well researched) → Low-skilled occupations most exposed to robots (Webb, 2020)
  - ***Manual Skills*** (in unstructured environments) → Humanoid Robots → Currently least exposed
  - ***Cognitive Skills*** → Computerization (software), AI (LLMs, GPTs) → Rapid transformation → Middle-wage occupations are most exposed to software, high-skilled occupations most exposed to AI (Webb, 2020; Brollo et al, 2024) (IMF))

Automation and Labour | *Analytical Framework*

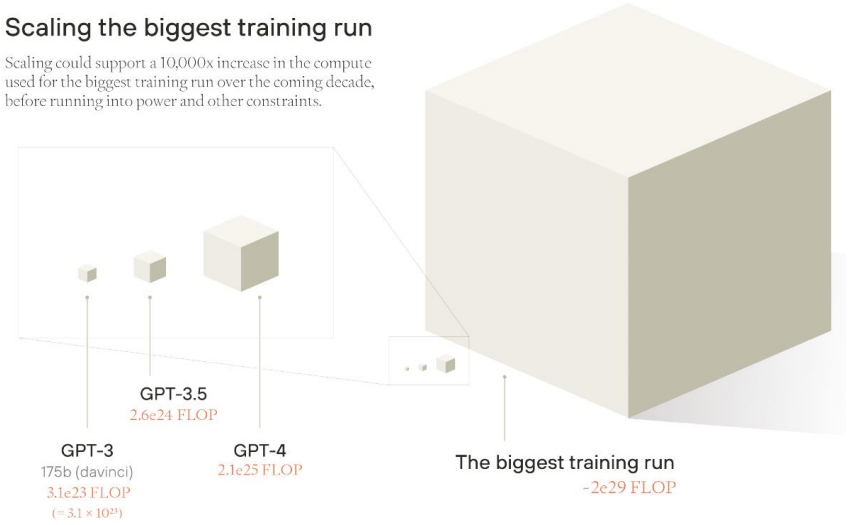
- ***Jobs versus tasks?*** → Initial jobs/occupation-focused framework (Frey & Osborne, 2013) has been replaced by a task-oriented framework (Wynne & Derr, 2025), but "[t]ask simplification could merely be a stepping stone toward total automation" (Frey & Osborne, 2024; Trammell, 2026)
- ***Skills versus routine?*** → Older "skill-biased technological change" (SBTC) hypothesis (that technology simply favors educated workers over uneducated ones) has been largely replaced by the "routine-biased technological change" (RBTC) framework (focusing tasks that are routine and codifiable) (Autor et al, 2003; Autor & Dorn, 2013) and moves to a "slicing by cognitive ability" hypothesis (affecting people with certain intrinsic cognitive properties, irrespective of training/skills) (Amodei, 2025)
- ***Manual versus cognitive/creative?*** → Older assessment that the bottlenecks of automaton are social intelligence, creative intelligence, and perception/manipulation (Frey & Osborne, 2013) (potentially) replaced by newer bottlenecks such as the impact of hallucination, social intelligence, creative novelty (Frey & Osborne, 2024) → Rule of thumb: If a task can be done remotely, it can potentially be automated by AI (Frey & Osborne, 2024)

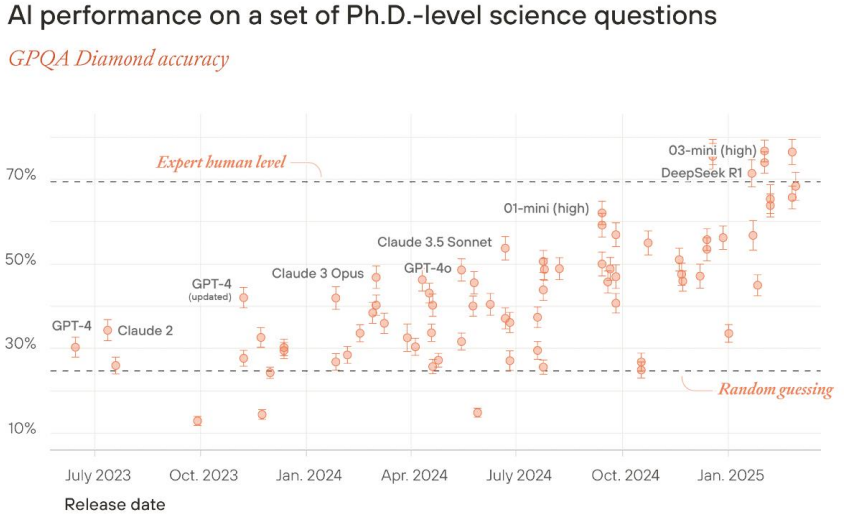
Automation and Labour | *Augmentation?*

- ***Augmentation/complementation versus replacement/substitution: The Historical Pattern***
  - All tasks can be performed by ***labor*** and automated tasks can be performed by ***either labor or capital***.
  - New technologies create ***winners and losers*** in the labor market (Webb, 2020).
  - Historically, automation takes over tasks previously performed by humans (reducing labor demand for those tasks) (***"displacement effect"***), but technology makes pieces of a given human job more efficient (***"productivity effect"***) (AI-induced productivity growth of 2-3%/year; Briggs & Kodnani, 2023) or creates new jobs (task creation) (***"reinstatement effect"***) (Acemoglu & Restrepo, 2017) → ***Displacement versus productivity/reinstatement***
  - 60% of workers today are employed in occupations that did not exist in 1940, implying that ***over 85% of employment growth*** over the last 80 years is explained by the technology-driven creation of new positions (Autor, 2022)
  - ***Evidence from Anthropic/Claude*** → Currently, 57% of AI usage suggests ***augmentation*** of human capabilities (e.g., learning or iterating on an output) while 43% suggests ***automation*** (e.g., fulfilling a request with minimal human involvement) (Handa et al, 2025 (Anthropic))

Automation and Labour | *Replacement?*

- ***Augmentation/complementation versus replacement/substitution: Is AI Different?***
  - ***Is AI different?*** (Amodei, 2025) → Astounding progress since 2023/24, cognitive breadth, slicing by cognitive ability, rate of AI adoption (nearly 40% of Americans report using generative AI; Tomlinson et al, 2025) → "Intelligence Explosion" (MacAskill & Moorhouse, 2025), rapid last-step automation of full workflows (Trammell, 2026), but as of 2025 maximum automation rate of 3.75% on Remote Labor Index (RLI) projects (Mazeika et al, 2025)



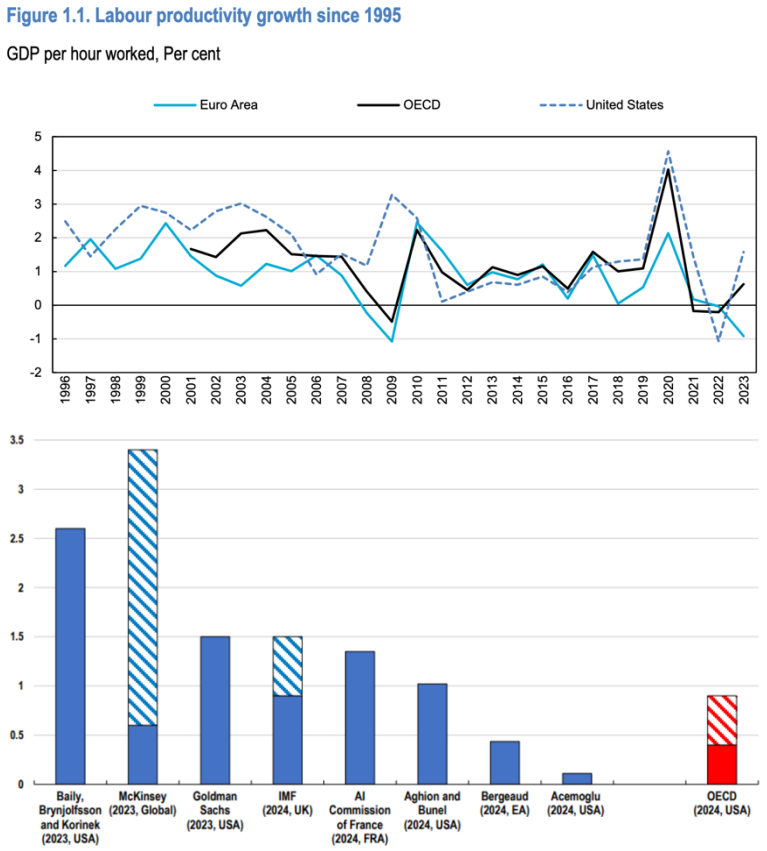


Automation and Labour | *Replacement?*

- ***Augmentation/complementation versus replacement/substitution: Is AI Different?***
  - ***Likely Differentiated Displacement***
    - Occupational heterogeneity in exposure to AI (Spencer et al, 2021 (EU): 38% collapsing occupations; Felten et al, 2023)
    - Different impact of replacing automation on inexpert tasks (reduces occupational employment but increases occupational wages) and on expert tasks (opposite) (Brynjolfsson et al , 2025)
    - Entry-level pipeline vs experienced workers (Brynjolfsson et al , 2025)
    - Differences between developed and emerging economies (OECD, 2019; Briggs & Kodnani, 2023)
    - Effects on wages depend on a race between automation and capital accumulation (Korinek & Suh, 2024)
    - Absent complementary institutional investments, technological innovation alone will not generate broadly shared gains (Autor, 2022)
    - AI expertise could shrink the performance gap between low- and high-skilled workers (i.e., AI could reduce income inequality; Agrawal et al, 2023; Tomlinson et al, 2025; Bloom et al, 2025), but AI has the potential to reduce labor demand through automation, leading to a decoupling of productivity gains from employment and wages (Lane & Saint-Martin, OECD 2021; Autor, 2022; Minniti et al, 2025)

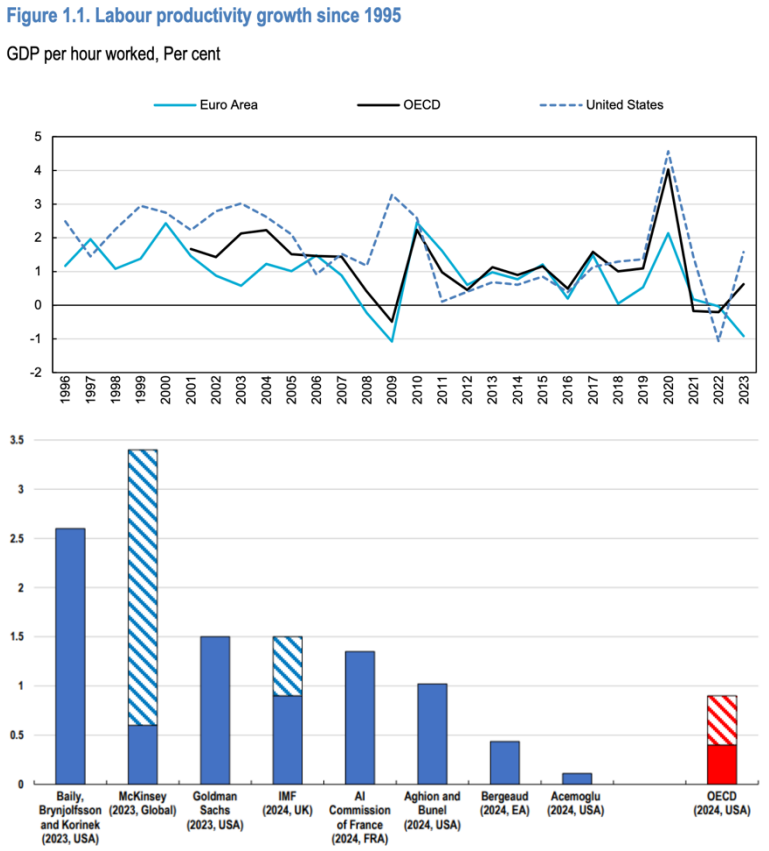
Automation and Labour | *Productivity*

- ***Transformative productivity gains through AI?***
  - ***Core question*** → Size of the "economic pie" and "technological redistribution" of income (Korinek & Stieglitz, 2017)
  - AI's predicted annual ***labour productivity gains*** over the next ten years in the G7 across studies between ***0.2 to 1.3pp*** (OECD, 2025) → ***Lagged? Mismeasured? Inexistent?*** – Overall unclear productivity path (Filippucci et al, 2024 (OECD))
  - ***GDP-level growth estimates*** range from a modest 0.93–1.56% cumulative gain over ten years (Acemoglu, 2024) to 7% (*Briggs & Kodnani*, 2023), with AGI scenarios projecting up to 100% (Korinek & Suh, 2024)
  - If AI generates ***large productivity gains***, it may increase wages even though it reduces the labor share (Acemoglu and Restrepo, 2018; Brollo et al, 2024 (IMF))
  - But: ***"So-So Technologies"*** = Capital deepening without much TFP growth, resulting in displacement without the compensating productivity dividend (Acemoglu et al, 2020)



Automation and Labour | *Productivity*

- ***Transformative productivity gains through AI?***
  - ***"Productivity Paradox"***, i.e., technological capability visibly accelerating while measured productivity growth stagnates or declines (Brynjolfsson et al, 2017) → ***Broadly declining labor productivity growth*** (OECD, 2025)
  - Possible reasons
    - ***Implementation lags*** for general-purpose technologies (e.g., electricity, computers, AI). → ***Optimist***
    - ***Mismeasurement*** through GDP and productivity statistics, which were designed for a goods-producing economy and do not adequately capture quality improvements, free digital goods, and consumer surplus from IT. ***(~)***
    - Capital deepening ***"So-So Technologies"***, where robots/AI do the same tasks humans did, just cheaper. → Productivity gains are real but narrow (they accrue to capital owners and high-skill workers). → ***Pessimist***
    - ***Diffusion slowdown and concentration effects***, with highly productive "frontier" firms ("superstars") versus the laggard majority. → ***Taxation?***

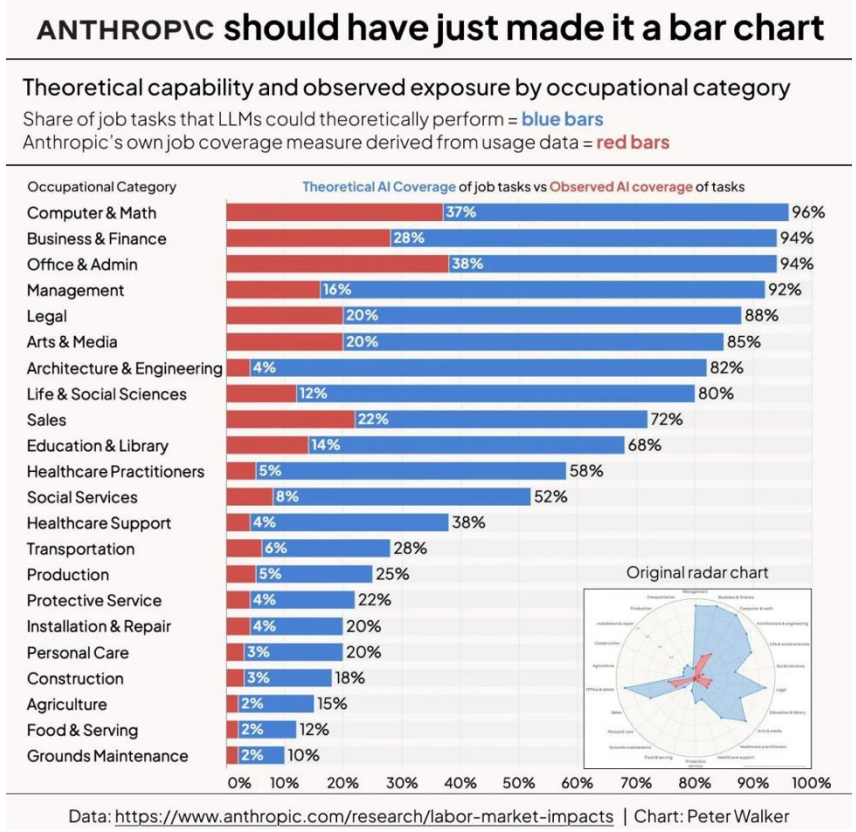


Automation and Labour | *Impact?*

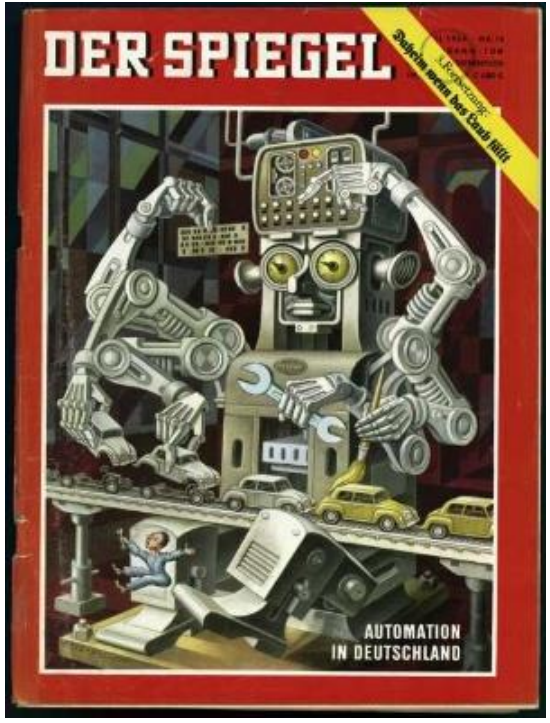
Study/Source	Estimate	Scope
Frey & Osborne (2013)	47% of occupations at high risk of computerization – For Europe: 54% (Bowles, 2014), for Germany: 42% (Bonin et al, 2015)	US occupations (jobs)
Arntz et al (2016) (OECD)	9% of jobs are automatable	OECD occupations (jobs)
Elliott, 2017 (OECD)	82% of current US employment is potentially automatable	US
Acemoglu & Restrepo (2017)	1 additional robot/thousand workers → Reduction of employment rate by 0.18-0.34pp (-6.5 jobs per robot) and wages by 0.25-0.5%	US
Nedelkoska & Quintini, 2018 (OECD)	14% of jobs at high risk of automation and 32% medium risk	OECD occupations (jobs)
Chiacchio et al (2020)	1 additional robot/thousand workers → Reduction of employment rate by 0.16-0.20pp, no significant associaton with wages	EU
Eloundou et al (2023)	80% of workers have ≥ 10% of tasks exposed to GPTs, and 19% have > 50% exposed	US tasks (GPT)
OECD (2023)	27% of employment at highest risk of automation	OECD
Briggs & Kodnani (2023)	18% of work globally could be automated, share of work exposed to generative AI 15-35%	Global
Brollo et al (2024) (IMF)	Exposed jobs: 60% in advanced economies, 40% in emerging markets economies, and 26% in low-income countries	Global employment
Acemoglu (2024)	19.9% tasks exposed to AI	US
World Economic Forum (2025)	+170m, −92m = net +78m	Global jobs by 2030
Brynjolfsson et al (2025)	16% relative employment decline of young workers in the most AI-exposed occupations	US (since 2024)
Minniti et al (2025)	Each doubling of AI innovation reduces labor share by 0.5% to 1.6%	Europe
Guarascio et al (2025)	Minimal impact of robotization on employment and wages (but severe distributional effects)	Meta analysis

Automation and Labour | *Impact?*

- ***Labor market impacts of AI***: A new measure and early evidence (Massenkoff/McCrory, 2026 [Anthropic])
  - New measure of AI displacement risk, observed exposure, that combines theoretical LLM capability and real-world usage data, weighting automated (rather than augmentative) and work-related uses more heavily
  - AI far from reaching its theoretical capability (actual coverage remains a fraction of what's feasible)
  - Occupations with higher observed exposure are projected to grow less through 2034
  - Workers in the most exposed professions are more likely to be older, female, more educated, and higher-paid
  - No systematic increase in unemployment for highly exposed workers since late 2022, though suggestive evidence that hiring of younger workers has slowed in exposed occupations



Evidence | *Direct and Indirect Effects*



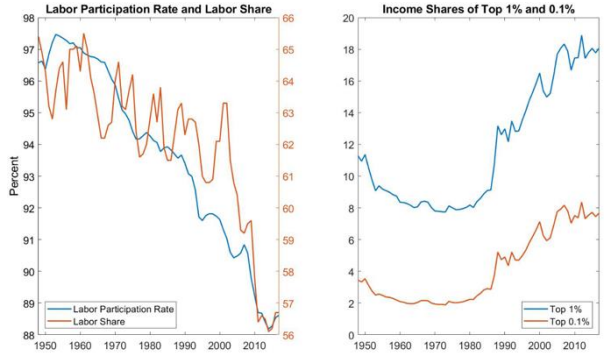
1964

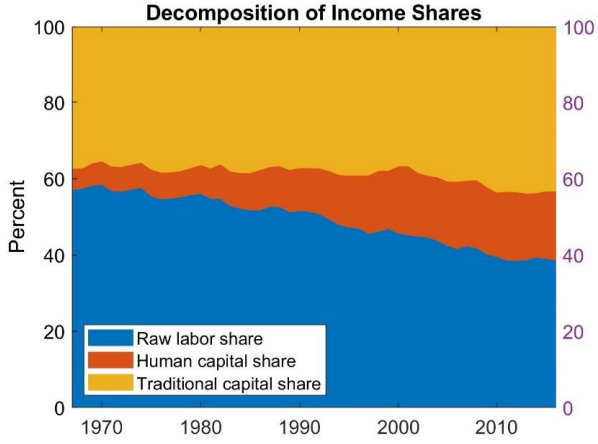
1970

2016

Evidence | *Labor Market*

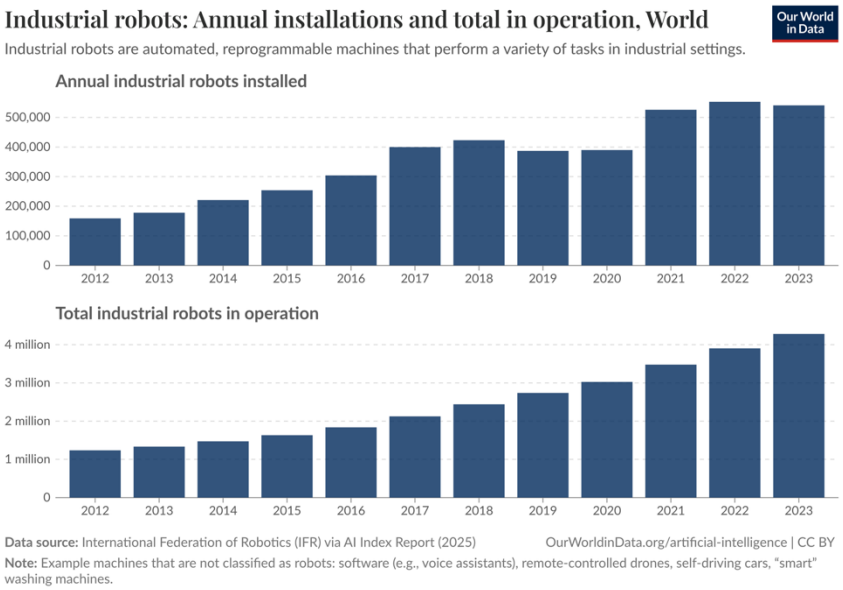
- ***Labor market developments***
  - ***Labor force participation rate***
    - US prime-age men (25–54) → Fell from 98% to 89% since WWII (Korinek, 2019) → Long-run structural decline
    - OECD working-age population → Stable at 74% in 2024, highest since 2008 (OECD, 2025) → No aggregate decline
  - ***Labor income share of the economy*** → Fell by 1.6pp between 2004 and 2024, under the influence of several structural shifts (e.g., capital-augmenting technology, automation, globalization, decline in bargaining power of workers (ILO/OECD, 2025), large decline in the US (66% to 58%, post-war to 2019; Korinek, 2019), overall declining but largely inconclusive (Bastani & Waldenström, 2024)
  - ***Raw-labour income share of the economy*** → Fell from 57% → 40% in the US (1967–2017; Korinek, 2019) – Conversely: Human capital share of the economy → Rose from 5.6% → 18.2% in the US (1967–2017; Korinek, 2019)
  - ***Wage growth versus productivity growth*** → Average real wage of regular workers declined over past 4 decades, a period in which total US income nearly tripled (Korinek, 2019)
  - ***Income share*** → Doubled to ~20% for top-1% and triple to ~10% for top-0.1% (post-war to 2019; Korinek, 2019)

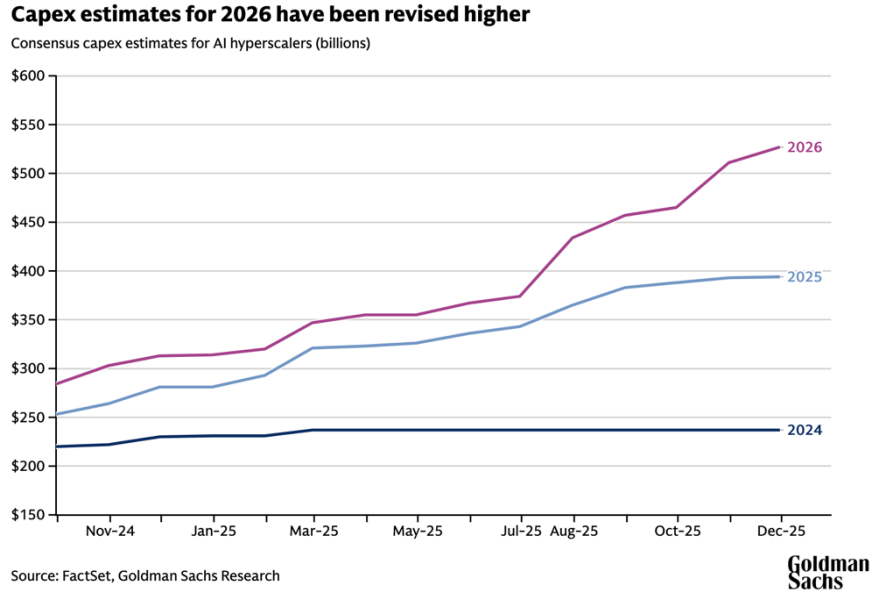




Evidence | *Automation*

- ***Automation developments***
  - Global stock of ***industrial robots*** grew from 400,000 (1993) to 1.75m (2014), 4.5–6m by 2025/26.
  - Massive ***investments in AI*** ($500bn for 2026: Goldman Sachs, 2025; for the EU27: Fonteneau, 2025)





Evidence | *Robots*

- ***Empirical data on non-AI automation (e.g., industrial robots)***
  - ***Displacement versus productivity/reinstatement***
    - Overall ***unclear picture*** whether robot adoption is overall labor replacing (and wage reducing) or if displacement effects are canceled out by reallocation effects.
      - Theory that robots substitute for human labor (e.g., Frey & Osborne, 2013; Acemoglu & Restrepo, 2020; Akar et al, 2023; Bonfiglioli et al, 2024; Giuntella et al, 2024; Bessen et al, 2025) …
      - … versus theory that robots complement human workers by enhancing productivity and creating new employment opportunities without reducing overall employment levels (Autor, 2015; Graetz & Michaels, 2018; for Germany: Dauth et al, 2021, showing impact on entry-level).
    - New ***empirical evidence*** that robots substitute for human labor (Korean firm-level evidence: Holtmann et al, 2025) vs. meta-analysis finding minimal impact of robotization on employment and wages (Guarascio et al, 2025)

Evidence | *Robots*

- ***Empirical data on non-AI automation (e.g., industrial robots)***
  - ***Why do we not see a larger drop in labor force participation, massive wage reductions and unemployment, tumbling labor share etc?*** (Lane & Saint-Martin, OECD 2021)
    - Composition of employment has shifted (hollowing out of middle-skill, middle-wage jobs, replaced by high-skill, high-wage jobs on one end and low-skill, low-wage service jobs on the other) (Autor et al, 2006; Autor et al, 2008; Goos & Manning, 2007)
    - Wage and income effects (raw-labor share versus human capital share)
    - Account for the counterfactual that, without automation, ageing societies and demographic tightening (i.e., labor scarcity) should see higher wages, labor share
    - Multiple factors relevant, distorting clear cause-effect relationships (e.g., export markets, labor institutions)

Evidence | *AI*

- ***Early empirical data on AI (LLMs, GPTs, agentic AI)***
  - Most transformative technology of the 21st century (Stanford AI Index Report, 2025) → Like the industrial revolution, but in only one decade?
  - Little evidence of AI's impact on the labor market (OECD, 2023; Gimbel at al, 2025) and unclear causation/correlation relationships (May & Badawy, 2026)
  - Currently (basically) no impact on productivity and employment, but expectations of sizable effects over the next 3 years (productivity +1.4%, output +0.8%, employment -0.7%) (Yotzov et al, 2026)
  - AI as a general-purpose technology that affects all levels of production (Eloundou et al., 2023: "GPTs are GPTs") → AI as a commodity?
  - Data on entry-level hiring: -16% (Brynjolfsson et al, 2025: "Canaries in the Coal Mine?")
  - Task-automation might lead to rapid automation of full workflows (Trammell, 2026)
  - But as of 2026, maximum automation rate of (only) 4.17% (Apr. 2026) (previously: 3.75% in Feb. 2026, up from 2,5% of earlier models) on Remote Labor Index (RLI) projects (Mazeika et al, 2025)
  - Labour market/economy outlook by Altman, 2021 (OpenAI) and Amodei, 2025 (Anthropic)
  - Overall concern: Capital deepening effect → Capital substitutes for labor, output per remaining worker rises, but the gains flow disproportionately to capital owners.

Evidence | *AI*

- ***Super-Forecasting***
  - Karger et al, ***Forecasting the Economic Effects of AI***, NBER Working Paper 35046 (Mar. 2026)
  - ***Forecasts by five groups*** → Academic economists, employees at AI companies, policy researchers focused on AI, highly accurate forecasters, and the general public.
  - ***Four scenarios*** → Unconditional and three scenarios for AI progress (slow, moderate, rapid)
  - ***Includes forecast on the AI impact on the labor market***, measured via the Labor Force Participation Rate (LFPR). In the rapid scenario: labor force participation rate falling from its current level of 62% to 55% by 2050, with roughly half of that decline – equivalent to around 10 million lost job –attributable to AI.

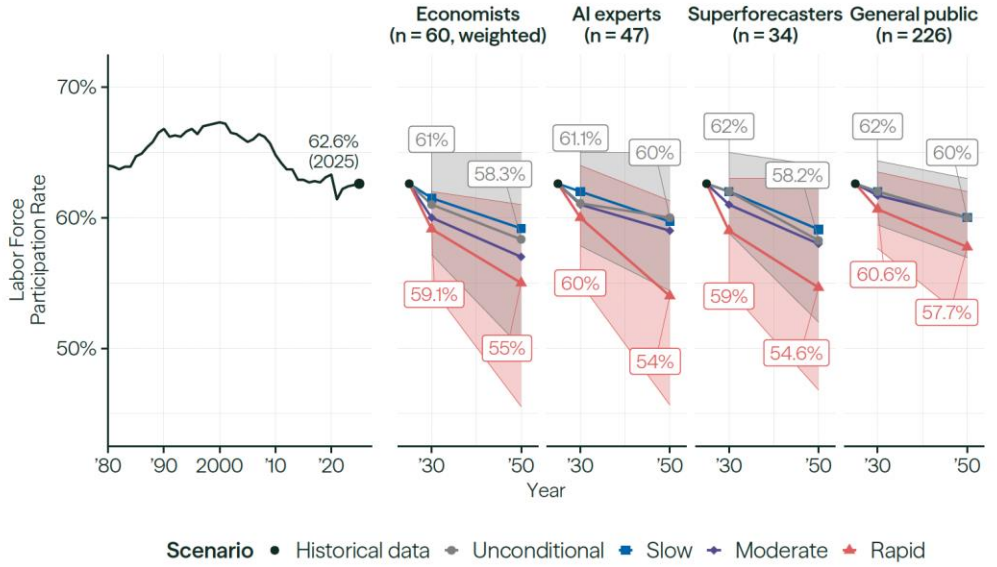
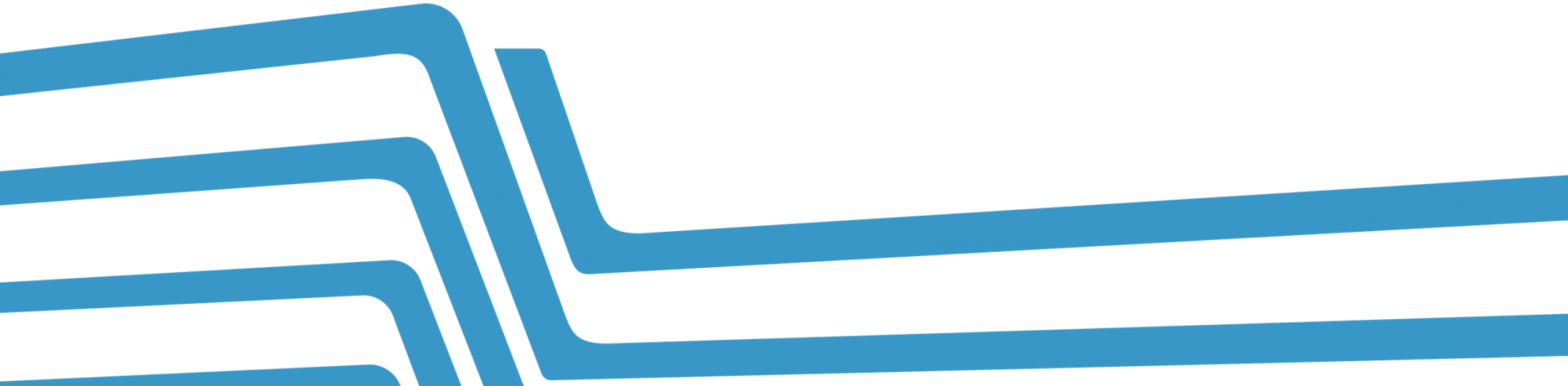


Figure 9: *Forecasts for the labor force participation rate (LFPR).* Lines show medians of 50th percentile forecasts across participants. Shaded regions span from the median 10th to the median 90th percentile forecast. The results for economists are reweighted to adjust for non-response bias (see Section 2.3). See Appendix H.4.4 for question details and the source of the historical data.

Part II
Implications for Taxation



The Telegraph

Return of the Luddites: why a robot tax could never work

Bloomberg Opinion

Taxing Robots Is a Great Way to Make People Poor

Forbes

Advancing the Debate on Taxing Robots

The Economist

Why taxing robots is not a good idea

The New York Times

Don't Fight the Robots. Tax Them.

MIT MANAGEMENT SLOAN SCHOOL

The case for taxing robots — or not

REUTERS

European parliament calls for robot law, rejects robot tax

The Korea Times

Korea takes first step to introduce 'robot tax'

QUARTZ

DROID DUTIES

The robot that takes your job should pay taxes, says Bill Gates

The Telegraph

Jeremy Corbyn plans to 'tax robots' because automation is a 'threat' to workers

Introduction | *Framework*

- ***Assumption*** → At least short-term ***disruption of the labor market*** and a transition of the workforce in almost all sectors of production and services.
- ***"Doubly Whammy"***
  - Decreasing ***wage tax revenues/social security contributions*** (which are a large part of government revenues) …
  - … and (!) increased expenditure for ***public social nets*** (e.g., unemployment support, retirement funding).
- Potential ***decrease in government revenue***, as labor is generally more heavily taxed than capital (both, at the personal and the firm levels; Hoerani et al, 2023 (OECD); Hemel, 2019; Kovacev, 2020), unclear offset by, e.g., corporate or VAT/consumption taxation
- ***Displacement, readjustment and inequality*** (e.g., capital share, declining middle-class, wage pressure etc) (OECD, 2019)
- ***Note:*** Non-tax regulation and policies (e.g., technological regulation, reskilling, labor market institutions, adult education, social protection policies, income support policies, welfare programs, UBI) (Spencer et al, 2021; EU/US study 2022).

Figure 1.5. Tax structures in 2023 (as % of total tax revenue)

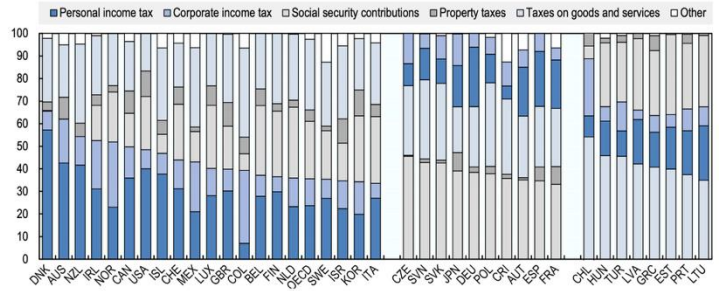
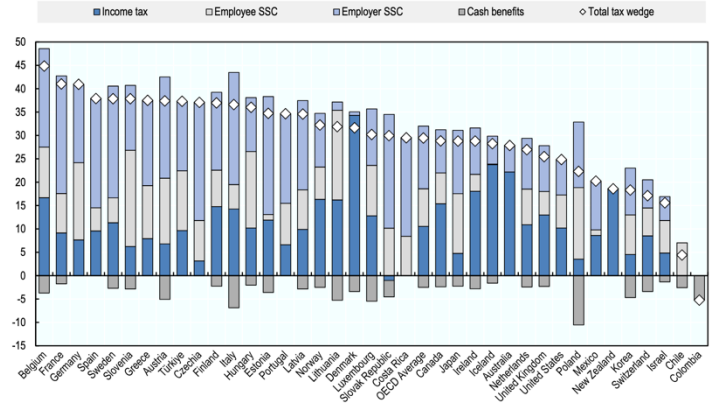


Figure 1.4. Income tax plus employee and employer social security contributions less cash benefits, 2024

For two-earner couples with two children, as % of labour costs



Introduction | *Framework*

- ***Some Initial Thoughts***
  - ***Taxation goals and tools?*** → Revenue? Inequality? Distortions?
    - ***Fiscal Rationale*** → Automation erodes the labor tax base, creating a revenue shortfall that must be recovered elsewhere.
    - ***Distributive Rationale*** → Productivity gains accrue disproportionately to capital, warranting more progressive taxation of capital and high incomes. → "Neutrality"? Incentives?
    - ***Corrective Rationale*** → Where automation substitutes for labor without generating commensurate productivity gains ("so-so technologies") firms do not internalize the social costs of displacement, creating a case for Pigouvian-style intervention to slow adoption, while taxing automation that does generate genuine productivity gains might be self-defeating. → Competitiveness? "Winner takes it All"? Would slowing adoption be welfare-improving?
  - ***International dimension?*** → "If local jobs are automated away while the profits pile up in California, Seattle, or Shenzhen, who exactly is going to fund their citizens' income?" (Hertz, 2025)
  - ***Lack of profits of "Superstar Firms"?*** → Longer phases of losses until immense market power (and market capitalization) (Bearer-Friend & Polcz, 2025)? Commercialization of AI as a good/service and in the production process? → Only very few AI "frontier companies" (e.g., Anthropic, DeepMind, OpenAI, Meta, xAI, Mistral AI), others build on their models.
  - ***"Who-Owns-the-Robots-Rules-the-World"-Thesis?*** → Employees/public as shareholders? Labor Income → Capital Income?

Tax Concepts | *Input and Output*

- ***(Excise) Taxes on automation/AI-intensive inputs***, e.g.,
  - ***energy*** (Hertzfeld, 2025; Ilieva, 2025)
  - ***data*** (e.g., customer/user data, behavioural tracking data, health/medical data, financial data, biometric data, location data, and derived insights from aggregation) (Cordell, 1996, and Cordell et al, 1997: "bit tax"; Lucas Mas & Junquera-Varela, 2021 (World Bank): digital data tax (DDT) on the international supply of Internet bandwidth to access digital markets; Marian, 2022: data-flow" tax) → Note: Discussion of ***value-added taxation*** of barter transactions concerning "free" services in "exchange" for data (EU Commission, 2025)
  - ***land*** (Altman, 2021: 2.5% annually of the value of all privately-held land)
  - ***robots*** (Oberson, 2017)
  - ***automation equipment*** (e.g., electronic cashiers; Kovacev, 2020)
  - ***compute*** (e.g., tax on chips, training infrastructure)
- ***Taxation of AI-driven outputs*** (e.g., DSTs)

Tax Concepts | *Production*

- ***Automation Taxes (e.g., "robot taxes", preferences for capital)***
  - ***General ideas*** → E.g., bring disappearing labor tax base back into the tax system, restore neutrality between human and automated work, slow down labor-substituting automation, limit (other) harmful effects
  - ***"Robot Tax"*** → Imputation of a hypothetical salary to labor-replacing "robots" either to the robot's owner or the robot itself ("status of electronic persons") (e.g., Oberson, 2017; Oberson, 2019; Oberson, 2021; for a critical assessment Dimitropoulou, 2024)
  - ***"Autonomous Artificial Intelligence (AAI) Tax"*** → AAI (tax) personhood and subject to income tax (Elkins & Eyal, 2025) or with tax rate on the income of the AAI based on harmfulness indices (Avi-Yonah et al, 2025)
  - ***"Automation Taxes"*** → E.g.,
    - ***reduction of incentives*** for investments in (labor-substituting) automation (Dimitropoulou, 2020; Dimitropoulou, 2024; Holtmann et al, 2025)
    - taxation of ***"robots" as intermediate goods*** in the generation of profits and rents (Daubanes & Yanni, 2019; Oberson, 2017: fee/object tax on robots)
    - ***denial of corporate tax deductions*** for "automated workers" (Abbott & Bogenschneider, 2018)
    - taxation that targets the ***ratio of automation*** (worker replacement), where tax increases as revenue-per-employee-ratio grows (e.g., Abbott & Bogenschneider, 2018; D'Orlando, 2018: tradeable permits where quotas of human employment can be bought and sold)
    - offsetting ***tax preferences for human workers*** to make automation relatively more expensive (Abbott & Bogenschneider, 2018)
    - higher ***VAT/denial of input deduction*** for acquisition of "robots" (Mitha, 2017)

Tax Concepts | *Production*

- ***Automation Taxes (e.g., "robot taxes", preferences for capital) (contd.)***
  - Limited economic models on the ***optimal taxation of "robots"*** for redistributive purposes from (complementable) non-routine work to (substitutable) routine work through wage compression (e.g., Thuemmel, 2018; Guerreiro et al, 2022; Thuemmel, 2023) and, conversely
  - ***Criticism*** → E.g., definitions ("robot", "AI", "AAI" etc), innovation, investment, offshoring production, reclassifying capital, restructuring, neutrality, ability-to-pay, insurance principle, international competition (see, e.g., Englisch, 2019; Barros, 2019; Spencer et al, 2021 (EU); Chand et al, 2021; Bastani & Waldenström, 2024)
  - ***Also:*** Obvious ***push for public/private AI investments*** (e.g., US: $500bn "Stargate Project"; EU: €200bn "InvestAI"; Canada: $2.4bn; China: $47.5bn semiconductor fund; France: €109bn; India: $1.25bn; Saudi Arabia: $100bn "Project Transcendence").
- ***Specific "AI Tax" on firms with ownership of a specific type of AI*** (Bearer-Friend & Polcz, 2025: one-time tax, payable in shares; for the international dimension Bearer-Friend, 2025, one-time payment of equity by non-resident companies in order to sell AI services to customers within their respective countries)
- Note: ALEC Model Legislation → ***The Artificial Intelligence Tax Non-Discrimination Act*** (2025)

Tax Concepts | *Outcomes*

- ***Adjustment of the "Tax Mix"***
  - Increased ***taxation of capital*** (higher share of GDP, complementary to high-skill work, economic rents) (), potentially including higher corporate taxation, windfall taxes on excessive profits of AI companies (Abbott & Bogenschneider, 2018; Mazur, 2019; Spencer et al, 2021; Bastani & Waldenström, 2024; Mazur, 2024; Olbert & Savva, 2026)
  - Global ***progressive capital tax*** (and taxation of inheritances) as a way to prevent inequality from growing extreme (Trammell & Patel, 2025; critical discussion, e.g., by Albrecht, 2026)
  - More ***progressive schedule for taxation of high incomes*** ("productivity dividend") (combined with capital taxation to prevent "mimicking"; Bastani & Waldenström, 2024), perhaps reduced taxation of low incomes
  - Higher ***capital gains taxation*** on sale of ownership interests in AI-intensive firms (Harpaz, 2026)
  - Long-term move to ***consumption taxation*** (Harpaz, 2026)
- ***Taxation of Market Capitalization of (Large) Companies*** (Altman, 2021: 2,5% annually, payable in shares) → "American Equity Fund" (Altman, 2021), "Public Wealth Fund" (OpenAI, 2026)

Tax Concepts | *Visionary?*

- ***Industrial Policy for the Intelligence Age: Ideas to Keep People First*** (OpenAI, 2026):

> *Modernize the tax base.* As AI reshapes work and production, the composition of economic activity may shift—expanding corporate profits and capital gains while potentially reducing reliance on labor income and payroll taxes. This could erode the tax base that funds core programs like Social Security, Medicaid, SNAP, and housing assistance—putting them at risk. Tax policy should adapt to ensure these systems remain durable. Policymakers could rebalance the tax base by increasing reliance on capital-based revenues—such as higher taxes on capital gains at the top, corporate income, or targeted measures on sustained AI-driven returns—and by exploring new approaches such as taxes related to automated labor. These reforms should be paired with wage-linked incentives that encourage firms to retain, retrain, and invest in workers, similar to existing R&D-style credits. Together, these changes would help stabilize funding for essential programs while supporting workforce transitions in an AI-driven economy.

Tax Concepts | *Discriminatory?*

- Note: American Legislative Exchange Council (ALEC) Model Legislation → ***The Artificial Intelligence Tax Non-Discrimination Act*** (2025) would prohibit the following:
  - ***Tax on Computing Power*** → No tax shall be levied specifically on the computing power used in the development or operation of artificial intelligence systems.
  - ***Remote-Only Access Sales Tax*** → No sales, use, or similar tax shall be imposed solely on artificial intelligence products or services that are accessed exclusively through electronic or remote means unless such tax applies equally to all software or digital services accessed in the same manner.
  - ***Differential Treatment of Artificial Intelligence Subscriptions*** → No additional tax shall be imposed on a subscription to an artificial intelligence service beyond the tax applied to comparable software-as-a-service (SaaS) or digital content subscriptions.
  - ***Artificial Intelligence-Derived Income*** → Income derived from the development, sale, licensing, or provision of artificial intelligence products and services shall not be taxed differently than income derived from other digital services.
  - ***Telecommunications Classification*** → Artificial intelligence services shall not be treated as telecommunications services for purposes of taxation unless such classification is uniformly applied to all software or digital applications providing similar functionalities.
  - ***Discriminatory Taxes*** → E.g., taxes that apply only to artificial intelligence products, services, or systems and not to equivalent non-artificial intelligence digital or software products, higher rates or additional categories of tax burdens on artificial intelligence services, subscriptions, or software compared to equivalent software-as-a-service (SaaS) or digital content offerings etc

Case Study | *Korea*

- ***Evidence of a "quasi-robot tax"*** → Holtmann, et al, Investment effects of a quasi-robot tax: Evidence from South Korea, arqus Discussion Paper No. 308 (2025) (firm-level study)
  - South Korea was an ***early adopter of industrial robots*** (with 5,462 of them newly installed in 1993), leading country with with 1,000 robots per 10,000 employees in 2021 (Germany: 397 robots per 10,000 employees)
  - ***2002:*** Tax ***credit for productivity-enhancing investments*** (new investments in automated systems, including industrial robots), credit of 7% for small firms, 5% for medium-sized firms, and 3% for large entities
  - ***2018: Reduced tax credits*** for automation investments for medium-sized firms to 3% and for large entities to 1% → *Not a "robot tax", but a "quasi robot tax", as both increase the after-tax cost of robots*

> Exploiting this natural experiment, we first show that reducing tax incentives for automation leads to a decline in both robot investment and broader production activities. Industries with a higher share of affected firms experienced a sharper drop in robot installations, and treated firms reduced their investment in fixed assets by about three percentage points relative to unaffected firms. Second, we find that financially unconstrained firms responded to the reduced incentive for automation by hiring additional employees, while financially constrained firms did not. This substitution toward labor suggests that robots and workers are, on average, substitutes in production. Third, our evidence indicates that scaling back the tax credit improved investment efficiency among financially unconstrained firms. These firms reallocated resources toward more productive uses, leading to gains in turnover, profitability, and gross profit, whereas financially constrained firms cut investment without such offsetting benefits.

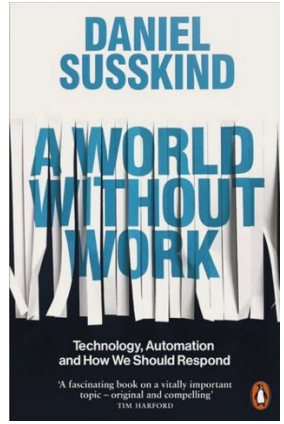
Tax Concepts | *International Dimension*

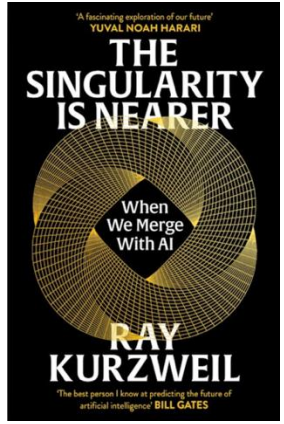
- ***Geographic Concentration*** → AI development and value creation are ***heavily concentrated geographically*** (Stanford AI Index Report, 2025):
  - In 2024, U.S. private AI investment grew to $109.1bn (nearly 12 times China's $9.3bn and 24 times the U.K.'s $4.5bn).
  - In 2024, U.S.-based institutions produced 40 notable AI models (compared to China's 15 and Europe's 3).
  - Fundamental allocation problem: ***Where should AI income be taxed?*** → "If local jobs are automated away while the profits pile up in California, Seattle, or Shenzhen, who exactly is going to fund their citizens' income?" (Hertz, 2025) → *Analogous to the discussion about the taxation of the "digitalized economy" and Pillar One?*
- ***Distortions through unilateral measures?*** → AI adoption/automation inevitable? Unilateral taxation of inputs/outputs/production?
- ***Multilateral solutions necessary?*** → E.g., "Global Internet Tax Agency" (Lucas Mas & Junquera-Varela, 2021 (World Bank)), destination-based taxation, market-access taxation, market capitalization taxation etc

Part III
Utopia or Dystopia?

Introduction | *Some Basics*

- Serious, but not hopeless? Hopeless, but not serious? Serious and hopeless?
- ***Some Terminology***
  - ***Artificial General Intelligence (AGI)*** → AI that matches human-level intelligence across all domains (machine learning researchers produced an aggregate forecast of 50% by 2047 in the 2023 AI Timeline Survey)
  - ***Artificial Superintelligence (ASI)*** → AI far exceeds human cognitive capabilities
  - ***Singularity*** → AI self-improvement triggers an "intelligence explosion", creating an ASI that develops at a pace beyond human comprehension.
  - ***Alignment Problem*** → Are ultimate goals of AI beneficial for humanity?
- ***Complex and unclear economic adjustments*** (e.g., Korinek, 2023; Korinek & Suh, 2024; Trammell & Korinek, 2025; Restrepo, 2025; Korinek & Lockwood, 2026)





Dystopia or Utopia | *Zero Labor*

- ***Dystopia or Utopia: Post-Labor Society***
  - Extreme outcome could be that all – or nearly all – ***occupations become fully automated and taken over by AI***, rendering human labour obsolete and dispensable in economic terms thus leading to ***mass unemployment*** (Korinek & Juelfs, 2022; Acemoglu and Lensman, 2023; Filippucci et al, 2024 (OECD); Restrepo, 2025: relevance of scarce compute; Krier, 2026: assumptions extreme, fragile, and demanding)
  - Humans become (nearly) ***irrelevant as economic actors***, ***labor's share of income will go to zero*** → As AI replaces human labour across sectors, ***two trends converge*** …
    - … production costs collapse ***toward zero*** as AI and robotics provide labor at marginal cost …
    - … and human wage income ***disappears*** as the source of purchasing power
  - ***Paradox***
    - If AI ownership remains concentrated, capital owners' consumption is insufficient to sustain demand, causing a broader economic breakdown (economic value of AI outputs approaches zero, capital returns disappear, "power" determined by scarce resources, e.g., AI systems, compute, energy, land, water)
    - Taxation limited or irrelevant as a revenue-mechanism, but rather to steer behavior, manage scarcity, and limit concentrated power
    - "It should lead to incredible productivity and therefore prosperity for society. [If distributed fairly], we should be in an amazing world of abundance for maybe the first time in human history, where things don't have to be zero sum." (Hassabis, 2025 (Google's DeepMind))

Dystopia or Utopia | *Transition?*

- ***Three Possible Phases***
  - Near-term (2026–2035): ***Augmentation Era*** → AI complements human labour (task exposure, displacement, modest productivity gains, growing wage inequality), but labor retains significant value. → Policy window, e.g., taxation, social protection systems (social insurance, labor market programs, social assistance; Brollo et al (2024) (IMF))
  - Medium-term (2035–2055): ***Substitution Era*** → AI capabilities surpass most cognitive tasks (massive inequality, declining labor share, accelerating capital concentration)
  - Long-term (2055+): ***Post-Labour Era*** → Labour share goes to 0, most human work becomes obsolete. → As the consumption base collapses under extreme concentration, traditional profit-making breaks down. → Products/services at near-zero marginal cost, traditional money economy breaks down, profits disappear, nobody has income. → ***Post-scarcity allocation systems? What remains to be taxed and why?***

Part IV
Summary

Key Takeaways | *Part I: Labor Market*

- ***Part I*** – Impact of Automation on the Labor Market
  - ***AI might be very different from previous automation waves*** → Industrial robots displaced low-skilled routine work, AI targets cognitive tasks, with high-skilled occupations most exposed.
  - ***Empirical evidence on job exposure*** is wide-ranging (9%–82%), but the distributional picture is clearer → Declining labor income share, wage-productivity decoupling, hollowing out of middle-skill jobs, uneven income distribution.
  - Historically, ***augmentation offset displacement*** → 85%+ of employment growth since 1940 driven by technology-induced job creation, but AI may break this pattern through rapid advances, substitution of high-skilled work, and workflow automation.
  - Potentially ***offsetting productivity gains*** are real but uncertain and unevenly distributed → Estimates range from ~1% over 10 years to 7% per year GDP growth → But: Risk of "so-so-technologies" (displacement without the compensating productivity dividend).
- ***Part II*** – Implications for Taxation
- ***Part III*** – Utopia or Dystopia?

Key Takeaways | *Part II: Taxation*

- ***Part I*** – Impact of Automation on the Labor Market
- ***Part II*** – Implications for Taxation
  - Automation might create a ***fiscal "doubly whammy"*** → Decreasing wage tax revenues/social security contributions and increased expenditure for public social nets → Labor more heavily taxed than capital, with any corporate or VAT/consumption tax offset limited and uncertain.
  - Three distinct rationales, each pointing to different tax instruments → ***Fiscal*** (recover lost revenue through tax mix adjustment), ***distributive*** (progressive capital/income taxation), ***corrective*** (Pigouvian-style intervention, but only sensible for "so-so technologies", as taxing genuinely productive automation might be self-defeating.
  - ***International dimension*** → AI value creation heavily concentrated geographically (US: 40 notable AI models in 2024; Europe: 3) → Unilateral measures risk distortion/circumvention/competitive disadvantages, multilateral solutions might be necessary (analogous to attempts for Pillar One), but politically fragile.
  - South Korea → Real-world ***quasi-experiment for a "robot tax"*** → Reduction of automation tax credits demonstrably reduced robot investment and increased employment.
- ***Part III*** – Utopia or Dystopia?

Key Takeaways | *Part III: Utopia or Dystopia*

- ***Part I*** – Impact of Automation on the Labor Market
- ***Part II*** – Implications for Taxation
- ***Part III*** – Utopia or Dystopia?
  - Near-term (2026–2035) is potentially (!) the ***critical policy window*** → AI still largely augments rather than replaces, labor retains significant value, but displacement is beginning → Window for adjustment of tax systems, social protection, and institutions.
  - Hypothetical extreme endpoint: ***Post-Labor Society*** → If AI ownership remains concentrated, collapse of wage income erodes the consumption base, eventually undermining even capital returns → "Power" determined by scarce resources (compute, energy, land, water) rather than money economy.
  - Utopia or dystopia would then depend on ***ownership distribution***, not technological progress → Broadly distributed AI ownership (through taxation, sovereign funds, employee ownership) would perhaps result in shared abundance, concentrated ownership in the paradox of breakdown.
  - ***Taxation's role*** likely transforms across phases → In the near term as a revenue and redistribution tool, in the medium term for managing accelerating inequality and capital concentration, and in the long-term for steering behavior and limiting concentrated power rather than raising revenue.

Thank you!