# Is the Dividing Line between Al **Automation and Labour Clear? International Economics Association Lecture Series of The Economic Consequences of Automation and Al**

Joshua Gans, April 2025

Reasoned for 21 seconds >

Here are three economists whose lectures would provide a broad, multifaceted view on AI and automation:

#### 1. Daron Acemoglu

#### Perspective:

Acemoglu is renowned for his work on the interplay between technology, institutions, and economic inequality. His research critically examines how technological advances—such as automation—can lead to shifts in labor markets and potentially widen societal gaps if not managed with appropriate policies and institutions.

#### Lecture Themes Might Include:

- Technological Disruption and Inequality: How automation can alter the distribution of income and influence political institutions.
- Institutional Responses: The role of government policy in mitigating adverse social outcomes and steering technological development.
- Historical and Contemporary Lessons: Case studies from industrial revolutions to today's AI-driven transformations

#### 2. Erik Brynjolfsson

#### Perspective:

Brynjolfsson's work centers on the digital economy and the transformative potential of information technologies. As a co-author of The Second Machine Age, he offers an optimistic yet nuanced view of how AI and automation can boost productivity and spur new economic opportunities, provided that firms and workers adapt effectively.

#### Lecture Themes Might Include:

- new business models.
- creativity and problem-solving rather than simply displacing labor.
- technological change.

If there were three economists in the world whom you would choose to offer three lectures on AI and automation and would present diverse views, who would they be?

• Digital Innovation and Growth: How Al-driven technologies are reshaping industries and creating

• Complementarity Between Machines and Humans: Exploring how technology can enhance human

• Policy and Skills Development: Strategies for workforce adaptation and education in an era of rapid

#### 3. David Autor

#### Perspective:

David Autor is a labor economist who has extensively examined the effects of technological change on job structure and wages. He is particularly known for his work on job polarization—the phenomenon where automation disproportionately affects middle-skill, routine jobs while boosting demand for both high-skill and low-skill occupations.

Lecture Themes Might Include:

- Labor Market Dynamics: Detailed analysis of how automation reshapes job opportunities and wage structures across different segments of the labor market.
- Routine-Biased Technological Change: Insights into why certain jobs are more vulnerable to automation than others.
- Adaptive Strategies: Policy and personal strategies for mitigating job displacement while embracing new opportunities created by AI.

Is the Dividing

Reasoned about AI automation and labor for 7 seconds > The line between what can be automated by artificial inte far from clear-cut. In many ways, it's a continuum rather t factors from technological capability to human values. Be ambiguity can be explored:

### 1. Technological Complexity and Capability

### **Evolving Technologies:**

- Adaptive and Learning Systems: Advanced Al syste that were once thought to require human intuition, ju for example, can analyze complex data patterns and certain contexts.
- Task Granularity: While some tasks such as routir themselves well to automation, other tasks require a ethical considerations that are still uniquely human.

### Interdisciplinary Integration:

 Automation is not just about replacing a single functi The interplay of hardware, software, and human over workflow, there might be steps where human interve

## 4. The Role of Human Skills and Creativity

### **Complementarity Rather Than Replacement:**

- completely.

### Augmentation versus Displacement:

empathetic elements.

## Conclusion

The ambiguity in the division between AI automation and labour arises from continuously evolving technology, shifting economic imperatives, and complex ethical considerations. Instead of a fixed line, there exists a dynamic interplay where the boundaries blur over time. Industries, governments, and educational institutions need to work together to navigate this transition, ensuring that technological progress contributes to more meaningful, equitable, and human-centric work rather than leaving workers behind.

In summary, while certain tasks may be clearly automatable and others clearly reliant on human intervention, the overall picture remains fluid and context-dependent. This continuum challenges us to rethink traditional notions of labour and to develop frameworks that balance technological innovation with human values.

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• Creative Problem-Solving: There are areas where human creativity and adaptability continue to be invaluable. Even when AI tools assist in creative processes, such as content generation or art, the human element often provides the innovative spark that AI cannot fully replicate.

• Interpersonal Dynamics: Jobs that require empathy, nuanced communication, and complex interpersonal skills — such as social work, therapy, or leadership — remain challenging to automate

• Many emerging models propose that AI should be seen as a tool to augment human capabilities rather than outright replace labour. In this view, human workers benefit from using AI to handle repetitive or data-intensive parts of their jobs, allowing them to focus on strategic, creative, and 1 often redefines jobs. Positions rate collaborative roles with AI systems,

ie and income are distributed. The ay also create disparities if the benefits olve accordingly.

cill workers benefit disproportionately nent without clear avenues for retraining. the transition does not leave vulnerable nated and what requires human labour.

inting accountability becomes complex. nal justice, and finance, where the ethical

catching up with technological air, unbiased, and transparent remains a

stems are designed to operate under nous, determining when and how

ire evolving in legal and regulatory + dividing line.

Reasoned about formal automation definition for 20 seconds > Economists often conceptualize automation in the context of production theory and technological change. While there isn't one universally accepted definition, a common formalization is as follows:

## Automation as Capital–Labor Substitution

## **Formal Definition:**

Automation is defined as the implementation of technology that allows capital (e.g., machinery, software, algorithms) to substitute for human labor in the production process. In production functions, this is typically modeled by showing a change in the input mix such that the marginal product of labor decreases relative to that of capital.

How might an economist define automation formally?

 $Y = \left[ \int \right]$ 

$$y_i = \left[\phi(i)R_i^{\frac{\sigma_a - 1}{\sigma_a}}\right]$$

$$Y = \left[ \int_{0}^{1} \left( \left[ \phi(i) R_{i}^{\frac{\sigma_{a}-1}{\sigma_{a}}} + (1 - \phi(i)) L_{i}^{\frac{\sigma_{a}-1}{\sigma_{a}}} \right]^{\frac{\sigma_{a}}{\sigma_{a}-1}} \right)^{\frac{\sigma_{a}-1}{\sigma_{a}}} di \right]^{\frac{\sigma_{a}}{\sigma_{a}-1}}$$

$$Y = \left[\int_0^1 \left(\phi(i)R_i + (1 - \phi(i))L_i\right)^{\frac{\sigma - 1}{\sigma}} di\right]^{\frac{\sigma}{\sigma - 1}}$$

Y = F(R, L)

$$\begin{bmatrix} 1 & \frac{\sigma-1}{\sigma} \\ y_i^{\frac{\sigma-1}{\sigma}} di \end{bmatrix}^{\frac{\sigma}{\sigma-1}}$$

$$\frac{1}{1} + (1 - \phi(i))L_i^{\frac{\sigma_a - 1}{\sigma_a}} \right]^{\frac{\sigma_a}{\sigma_a - 1}}$$

## Premises

Robots won't do every task if labour can find new tasks for which they have a lower opportunity cost

Robots can do any task

Robots will do any task for which they have a lower opportunity cost than labour



# "Clearly AI is going to win. How people adjust is a fascinating problem."

Daniel Kahneman, 2021

# What this misses

Ends up with calls to limit automation competition by focussing on "humancentric Al"

## Codifies the "Lump of AI" fallacy

## Abstracts from capabilities of AI and presumes superhuman potential

# The "Lump of Al" Fallacy



Issues	$\sim$
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Litigation

## **ESSAYS AND SCHOLARSHIP What Will Remain for People to Do?**

The future of labor in a world with increasingly productive AI

**BY DANIEL SUSSKIND APRIL 7, 2025** 



Sébastien A. Krier using

#### **ARTIFICIAL INTELLIGENCE AND DEMOCRATIC FREEDOMS**

A project studying how advanced AI systems may harm, or help strengthen, democratic freedoms

## Abstract

What paid work might remain for human beings to do if we approach a world where AI is able to perform all economically useful tasks more productively than human beings? In this paper, I argue that the answer is not 'none at all.' In fact, there are good reasons to believe that tasks will still remain for people to do, due to three limits: 'general equilibrium limits,' involving tasks in which labor has the comparative advantage over machines (even if it does not have the absolute advantage); 'preference limits,' involving tasks where human beings might have a taste or preference for an un-automated process; and 'moral limits,' involving tasks with a normative character, where human beings believe they require a 'human in the loop' to exercise their moral judgment. In closing, I consider the limits to these limits as AI gradually, but relentlessly, becomes ever-more capable.

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https://knightcolumbia.org/content/what-will-remain-for-people-to-do

About  $\sim$ 

![](_page_9_Picture_19.jpeg)

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human beings. Until now, the most useful question for thinking about the impact of technology on paid work has been 'what machines can and cannot do.' But as we approach a world with AGI, that question will fade away, and 'what will remain for human beings to do, if machines can do everything' will take its place.

- General equilibrium limits (opportunity cost)
- Preference limits (intrinsic value for human input)
- Moral limits (don't trust) machines)

![](_page_9_Figure_27.jpeg)

"Lump of Labour" Fallacy: Fixed pool of jobs that Al could take away is mitigated by increased productivity creating more demand and more jobs

"Lump of AI": when AI is used it only benefits its owners so that workers need to find new tasks

Fallacy: Al still benefits labour through increased productivity and increased demand for labour

What is the Fallacy?

![](_page_11_Picture_0.jpeg)

"[S]o long as the rate of interest remains constant [depends on savings] preferences] an advance in technology can only produce a rising level of real wages. The only route through which technological advance could lower real wages would be by increasing the capital coefficient (the added cost being compensated by a larger decline in the labor coefficient), thereby creating a scarcity of capital and pushing interest rates sharply upward."

Single commodity economy: product can be used for production alongside labour

$$\underbrace{w}_{Y} \cdot \underbrace{a}_{Y} + (1 - \underbrace{r}_{Y}) \cdot \underbrace{b}_{Y} = \underbrace{1}_{Y}$$
  
wage  $= \frac{L}{Y}$  interest  $=\frac{R}{Y}$  price  
 $Y = w \cdot L + (1 - r) \cdot R$   
 $(a, b) \rightarrow (a', b') \implies w \cdot a' + (1 + r) \cdot b' < 1$   
Possibility 1:  $a' < a, b' = b \implies w' > w$   
Possibility 2:  $a' = a, b' < b' \implies w' > w$ 

## Only changes if AI increases the cost of capital relative to goods

![](_page_11_Figure_6.jpeg)

![](_page_11_Figure_7.jpeg)

![](_page_11_Figure_8.jpeg)

## **Artificial Intelligence** and Economic Growth

Philippe Aghion, Benjamin F. Jones, and Charles I. Jones

#### 9.1 Introduction

This chapter considers the implications of artificial intelligence for economic growth. Artificial intelligence (AI) can be defined as "the capability of a machine to imitate intelligent human behavior" or "an agent's ability to achieve goals in a wide range of environments."1 These definitions immediately evoke fundamental economic issues. For example, what happens if AI allows an ever-increasing number of tasks previously performed by human labor to become automated? Artificial intelligence may be deployed in the ordinary production of goods and services, potentially impacting economic growth and income shares. But AI may also change the process by which we create new ideas and technologies, helping to solve complex problems and scaling creative effort. In extreme versions, some observers have argued that AI can become rapidly self-improving, leading to "singularities" that feature unbounded machine intelligence and/or unbounded economic growth in

Philippe Aghion is a professor at the Collège de France and at the London School of Economics. Benjamin F. Jones is the Gordon and Llura Gund Family Professor of Entrepreneurship, professor of strategy, and faculty director of the Kellogg Innovation and Entrepreneurship Initiative at Northwestern University, and a research associate of the National Bureau of Economic Research. Charles I. Jones is the STANCO 25 Professor of Economics at the Graduate School of Business at Stanford University and a research associate of the National Bureau of Economic Research.

We are grateful to Ajay Agrawal, Mohammad Ahmadpoor, Adrien Auclert, Sebastian Di Tella, Patrick Francois, Joshua Gans, Avi Goldfarb, Pete Klenow, Hannes Mahlmberg, Pascual Restrepo, Chris Tonetti, Michael Webb, and participants at the NBER Conference on Artificial Intelligence for helpful discussion and comments. For acknowledgments, sources of research support, and disclosure of the authors' material financial relationships, if any, please see http:// www.nber.org/chapters/c14015.ack.

1. The former definition comes from the Merriam-Webster dictionary, while the latter is from Legg and Hutter (2007).

## $Y_t = A_t$

 $Y_t = A_t$ 

Baumol's cost disease is intrinsic.

$$\left(\int_{0}^{1} X_{it}^{\rho} di\right)^{1/\rho} \text{ where } \rho < 0 \qquad X_{it} = \begin{cases} L_{it} & \text{if not automate} \\ R_{it} & \text{if automated} \end{cases}$$
$$\left[\beta_{t} \left(\frac{R_{t}}{\beta_{t}}\right)^{\rho} + (1-\beta_{t}) \left(\frac{L}{1-\beta_{t}}\right)^{\rho}\right]^{1/\rho} \implies Y_{t} = A_{t} \left(\beta_{t}^{1-\rho} R_{t}^{\rho} + (1-\beta_{t})^{1-\rho} R_{t}^{\rho}\right)^{1-\rho} R_{t}^{\rho}$$
$$\frac{\alpha_{Rt}}{\alpha_{Lt}} = \left(\frac{\beta_{t}}{1-\beta_{t}}\right)^{1-\rho} \left(\frac{R_{t}}{L_{t}}\right)^{\rho}$$

As share of tasks automated ( $\beta_t$ ) increases, this increases the capital share but, as these tasks grow faster, their price declines and so income share falls.

Increase in  $\beta_t$  equivalent to b' < b and a' > a: Automation is capital-depleting and labour-augmenting!

![](_page_12_Picture_16.jpeg)

# Actual AI versus Automated AI

![](_page_14_Figure_0.jpeg)

![](_page_14_Picture_1.jpeg)

![](_page_14_Picture_2.jpeg)

# **Generative Al requires judgment**

![](_page_16_Picture_0.jpeg)

![](_page_16_Figure_1.jpeg)

Write a letter

Chat GPT writes letter Decide to send letter

## Michigan Shooting Condolence Message Drafted by AI Bot

![](_page_17_Picture_1.jpeg)

Students crossing the lawn on the campus of Peabody College at Vanderbilt University in Nashville, Tenn., September 18 (Harrison McClary/Reuters)

By CAROLINE DOWNEY February 20, 2023 3:33 PM

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Vanderbilt University's education school has apologized after sending a condolence message to staff and students regarding a recent shooting at Michigan State University that was drafted by <u>ChatGPT</u>, the artificial intelligence-powered chat bot.

The letter from the Peabody College's office of diversity, equity, and inclusion expressed regret about the Michigan <u>tragedy</u>, in which a gunman killed three students and left five others in critical condition last week. The note, signed by associate and assistant deans of the college, included an attribution attached to the bottom that read, "Paraphrase from OpenAI's ChatGPT AI language model, personal communication, February 15, 2023."

"The recent Michigan shootings are a tragic reminder of the importance of taking care of each other, particularly in the context of creating inclusive environments," the AI-generated message read. "As members of the Peabody campus community, we must reflect on the impact of such an event and take steps to ensure that we are doing our best to create a

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![](_page_18_Picture_9.jpeg)

Dear University community and the victims of the Michigan State University shooting,

I am writing to you today as the President of Vanderbilt College to express my deepest apologies for the initial condolence letter that was sent out using ChatGPT. As the leader of this institution, I take full responsibility for any pain or harm that this may have caused.

The tragedy that occurred at Michigan State University has deeply affected us all. My heart goes out to the victims and their families, and I know that no words can truly express the depth of our sorrow and sympathy. It is in times like these that we must come together as a community to support one another and to stand strong in the face of tragedy.

I want to assure you that Vanderbilt College stands in solidarity with the University community and the victims of this terrible event. We are committed to providing the support and resources necessary to help those affected by this tragedy in any way we can.

Moving forward, we will take every necessary step to ensure that all communications from our institution are thoughtful, appropriate, and sensitive to the needs of our community. We will work with our staff and faculty to implement measures to prevent a similar incident from happening again.

Once again, I offer my sincerest apologies for any pain or harm that may have been caused by the initial response. Please know that we are here for you, and we will do everything in our power to support you during this difficult time.

Sincerely,

[Your Name] President, Vanderbilt College

![](_page_18_Picture_18.jpeg)

# **Practical Al Adoption Needs Humans**

## 95% Accuracy Is Not All You Need

Kevin A. Bryan and Joshua S. Gans<sup>\*</sup>

April 17, 2025

#### Abstract

We formalize a decision-theoretic model where information from AI, a statistical model, human effort, or some combination of these methods is used to choose an action under uncertainty. The AI prediction is more accurate, but it is hard to know ex ante which states of the world cause the AI prediction to fail. The statistical method is less accurate, but its boundary conditions are clear. Human effort is more expensive. We show precisely when each method is optimally used, when they are used in combination, and how adversarial problems, O-Ring problems, and agentic AI models depend on these tradeoffs. Journal of Economic Literature Classification Numbers: O33, D82

Keywords. artificial intelligence, prediction, generative AI, verification, stakes, adoption.

- N possible states (Pr = 1/N); true state is  $\theta$
- Choose N actions, with payoff H (>0) if match state and L (<0) otherwise
- - ullet
  - AI: At cost  $c_A$ , prediction that is correct with probability q (> p)**Results:**

Three tools:

- **Verification** (Human). Check states one by one at cost, c (sequential)
- **Statistics**: At cost  $c_S$ , find out correct state with prob, p, otherwise no answer

- Dominated to run S after using AI
- 10 possible strategies (combining tools)
- Al won't be used if q is too low
- If c and |L| are high, never use AI even as  $q \rightarrow 1$  and  $c_A \rightarrow 0$
- Al won't be used alone if verification and statistical pre-screening are cheap

![](_page_19_Picture_25.jpeg)

# Human versus Artificial Intelligence

## The Turing Trap: The Promise & Peril of Human-Like Artificial Intelligence

![](_page_21_Picture_1.jpeg)

Erik Brynjolfsson Director Stanford Digital Economy Lab

January 12, 2022 20-min read

Dædalus Spring 2022

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![](_page_21_Picture_6.jpeg)

In 1950, Alan Turing proposed an "imitation game" as the ultimate test of whether a machine was intelligent: could a machine imitate a human so well that its answers to questions are indistinguishable from those of a human.<sup>1</sup> Ever since, creating intelligence that matches human intelligence has implicitly or explicitly been the goal of thousands of researchers, engineers and entrepreneurs. The benefits of human-like artificial intelligence (HLAI) include soaring productivity, increased leisure, and perhaps most profoundly, a better understanding of our own minds.

But not all types of AI are human-like—in fact, many of the most powerful systems are very different from humans —and an excessive focus on developing and deploying HLAI can lead us into a trap. As machines become better substitutes for human labor, workers lose economic and political bargaining power and become increasingly dependent on those who control the technology. In contrast, when AI is focused on augmenting humans rather than mimicking them, then humans retain the power to insist on a share of the value created. What's more, augmentation creates new capabilities and new products and services, ultimately generating far more value than merely human-like AI. While both types of AI can be enormously beneficial, there are currently excess incentives for automation rather than augmentation among technologists, business executives, and policymakers.

![](_page_21_Picture_9.jpeg)

NEWS

# Shopify CEO says no new hires without proof AI can't do the job

![](_page_22_Picture_2.jpeg)

Bloomberg via Getty Images

![](_page_22_Picture_4.jpeg)

Jay Peters is a news editor covering technology, gaming, and more. He joined The Verge in 2019 after nearly two years at Techmeme.

/ 'Before asking for more Headcount and resources, teams must demonstrate why they cannot get what they want done using Al.'

by Jay Peters Apr 7, 2025, 6:06 PM EDT

79 Comments (79 New)

![](_page_22_Picture_9.jpeg)

![](_page_23_Figure_0.jpeg)

![](_page_24_Picture_0.jpeg)

![](_page_25_Picture_0.jpeg)

AI, SKILL, AND PRODUCTIVITY: THE CASE OF TAXI DRIVERS

> Kyogo Kanazawa Daiji Kawaguchi Hitoshi Shigeoka Yasutora Watanabe

Working Paper 30612 http://www.nber.org/papers/w30612

NATIONAL BUREAU OF ECONOMIC RESEARCH 1050 Massachusetts Avenue Cambridge, MA 02138 October 2022

## NBER WORKING PAPER SERIES

We find that AI improves the productivity of taxi drivers by shortening the search time by 5%, on average. Estimations with and without IV yields similar results, reassuring that the endogeneity of AI usage is not a serious concern, given the rich sets of fixed effects. Importantly, the productivity gain is concentrated on low-skilled drivers; the impact on low-skilled drivers, where skill is defined by previous driving performance, is 7%, whereas the impact on high-skilled drivers is nearly zero or even negative (albeit not statistically significant). As a result, the AI narrows the productivity gap between high- and low-skilled drivers by about 14%. These results indicate that the AI is a substitute for worker skill, at least in this context.

![](_page_27_Figure_1.jpeg)

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![](_page_28_Figure_1.jpeg)

We study the staggered introduction of a generative AI-based conversational assistant using data from 5,179 customer support agents. Access to the tool increases productivity, as measured by issues resolved per hour, by 14 percent on average, with the greatest impact on novice and low-skilled workers, and minimal impact on experienced and highly skilled workers. We provide suggestive evidence that the AI model disseminates the potentially tacit knowledge of more able workers and helps newer workers move down the experience curve. In addition, we show that AI assistance improves customer sentiment, reduces requests for managerial intervention, and improves employee retention.

Erik Brynjolfsson Stanford & NBER

Danielle Li MIT & NBER

April 25, 2023

## Generative AI at Work<sup>\*</sup>

Lindsey Raymond MIT

![](_page_29_Figure_7.jpeg)

# London's largest black-cab school to close

## Knowledge Point to shut after 26 years, with rising rents and low unemployment blamed more than Uber

![](_page_30_Picture_2.jpeg)

Trainee black-cab drivers study at the Kno Calton/The Observer

Trainee black-cab drivers study at the Knowledge Point school, London. Photograph: Gary

## Should we restrict competition from AI?

Yes, because capital has a more favourable tax treatment than labour

Yes, private markets under-supply human capital investments (free-riding/liquidity)

Yes, missing insurance markets for technological unemployment

Yes, there has been under-investment in innovation that helps humans work with machines

Yes, current generations make choices that neglect increasing future inequality

## Should we restrict competition from AI?

No, because competition leads to a better allocation of resources and productivity even in a second-best world

No, because it is more likely than not that AI will develop to complement existing human resources and capabilities than ignore them

No, because past automation has been fine. People found other stuff to do as adoption was slow

It comes Will AI diffusion be fat Specifically, will

- It comes down to speed
- Will AI diffusion be faster than we can adjust?
  - Specifically, will people slow it down?

![](_page_34_Picture_1.jpeg)

## Almon Strowger

![](_page_35_Picture_1.jpeg)

![](_page_35_Picture_2.jpeg)

## Almon Strowger

![](_page_36_Picture_1.jpeg)

![](_page_36_Picture_2.jpeg)

![](_page_36_Picture_3.jpeg)

## Almon Strowger

## "girl-less, cuss-less, outof-order-less and waitless"

![](_page_37_Picture_2.jpeg)

![](_page_38_Picture_0.jpeg)

![](_page_38_Picture_1.jpeg)

## ANSWERING THE CALL OF AUTOMATION: HOW THE LABOR MARKET ADJUSTED TO MECHANIZING **TELEPHONE OPERATION\***

### JAMES FEIGENBAUM AND DANIEL P. GROSS

In the early 1900s, telephone operation was among the most common jobs for American women, and telephone operators were ubiquitous. Between 1920 and 1940, AT&T undertook one of the largest automation investments in modern history, replacing operators with mechanical switching technology in over half of the U.S. telephone network. Using variation across U.S. cities in the timing of adoption, we study how this wave of automation affected the labor market for young women. Although automation eliminated most of these jobs, it did not reduce future cohorts' overall employment: the decline in operators was counteracted by employment growth in middle-skill clerical jobs and lower-skill service jobs, including new categories of work. Using a new genealogy-based census-linking method, we show that incumbent telephone operators were most affected, and a decade later more likely to be in lower-paying occupations or no longer working. JEL codes: E24, J21, J24, J62, M51, M54, N32, O33, O40.

### I. INTRODUCTION

Automation anxiety has recently surged in the United States and other developed economies (Autor 2015), fueled by warnings of a sweeping wave of automation (Brynjolfsson and McAfee **2014**). Yet the degree to which automation reduces employment,

![](_page_39_Figure_5.jpeg)

The figure shows the fraction of Bell system telephones with mechanical operation (i.e., dial) over time. Data are from "Bell System Distributions of Company Telephones," AT&T Archives and History Center, Box 85-04-03-02. Note that adoption investments declined during the Great Depression, leading to a slowdown in the late 1930s, and War Production Board restrictions on the use of copper during World War II effectively halted installations for the duration of the war.

![](_page_39_Figure_8.jpeg)

![](_page_40_Picture_0.jpeg)

![](_page_41_Picture_0.jpeg)

![](_page_41_Picture_1.jpeg)

## HOW TO CREATE A FUTURE

THAT IS MORE STAR TREK

THAN TERMINATOR

![](_page_41_Picture_5.jpeg)

### JOSHUA GANS + ANDREW LEIGH

![](_page_41_Picture_8.jpeg)

The Simple Economics of **Artificial Intelligence** 

AJAY AGRAWAL

## Joshuagans.Substack.com

# ajoshgans

HARVARD BUSINESS REVIEW PRESS Updated and Expanded

# Prediction Machines

![](_page_41_Picture_15.jpeg)

JOSHUA GANS

AVI GOLDFARB HARVARD BUSINESS REVIEW PRESS

# Power and Prediction

![](_page_41_Picture_20.jpeg)

The Disruptive Economics of Artificial Intelligence

AJAY AGRAWAL JOSHUA GANS

AVI GOLDFARB

![](_page_41_Picture_25.jpeg)

# @joshgans

## The Microeconomics of Artificial Intelligence

## Joshua Gans

## Coming (MIT Press) Dec 2025 Joshuagans.Substack.com

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alldayta.com