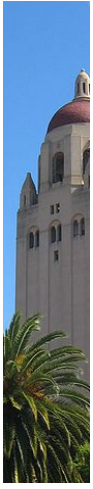

A.I. and Our Economic Future

Chad Jones
Stanford GSB

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A.I. and Our Economic Future

- A.I. is likely to be the most transformative technology in our lifetime
  - Latest in a line: electricity, semiconductors, the internet
- What if machines — A.I. for cognitive work and A.I. plus robots for physical work — can perform every task a human can do, but more cheaply?
- Two scenarios:
  - A.I. accelerates economic growth
  - A.I. is “business as usual”

Scenario 1: A.I. dramatically accelerates economic growth

- Near-term productivity boosts from A.I.
  - Software: Claude Opus 4.5 performs better than any human on Antropic's two hour coding exam
  - In the next decade: A.I. agents that can automate most coding?
  - Virtuous circle: better algorithms and A.I. agents = virtual remote workers

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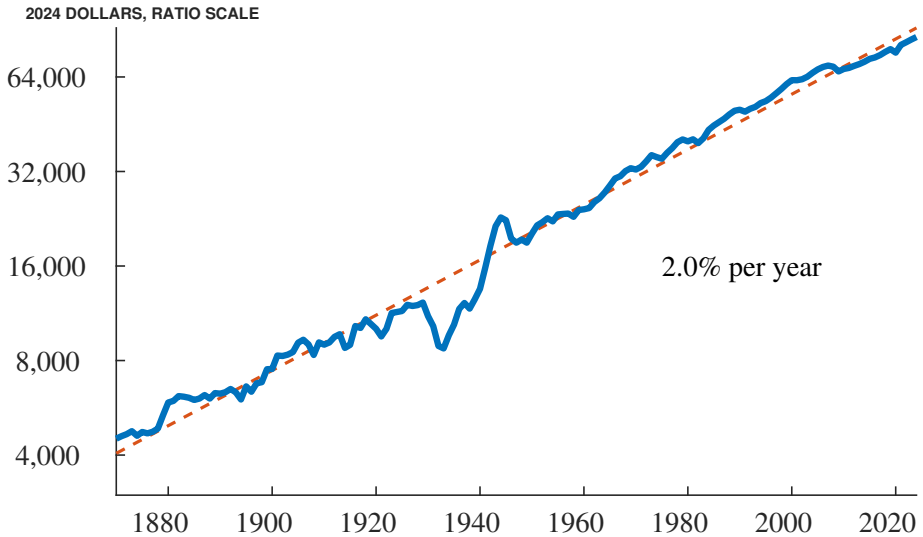
  - Virtuous circle: better algorithms and A.I. agents = virtual remote workers
- Billions of virtual research assistants, running 100x faster than us — a "country of geniuses in a data center" (Dario Amodei)
  - Automate most cognitive tasks $\Rightarrow$ invent new ideas
  - E.g. better chips, robots, medical technologies, etc.
  - A.I. + robots $\Rightarrow$ automate physical tasks
- Potential to raise growth rates substantially over the next 25 years?

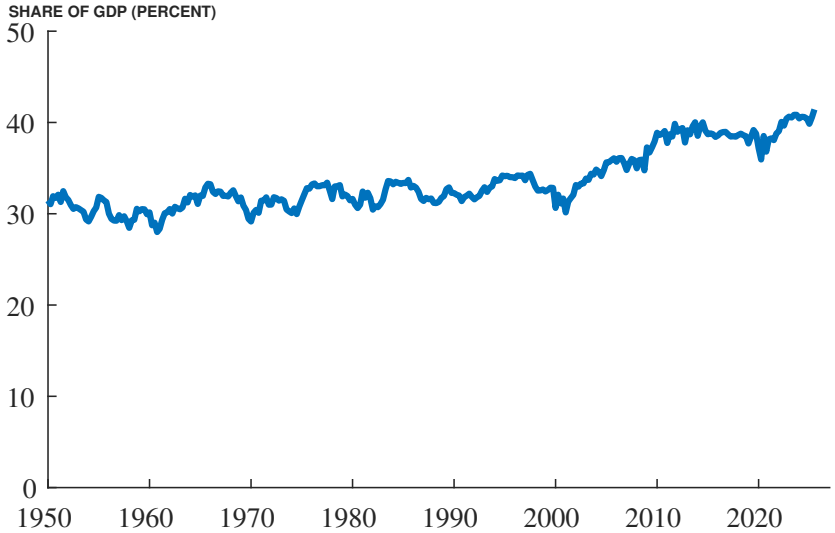
Scenario 2: A.I. as "Business as Usual"

- Automation has been going on for 150 years with no speed up in growth
  - Electricity, engines, semiconductors, the internet, smartphones
  - Yet growth always 2% per year
- Maybe those great ideas are what *kept* growth from slowing
  - Perhaps A.I. = latest great idea letting us maintain 2% growth for a while longer. (pessimistic view, but possible)
- Economic history $\Rightarrow$ may take longer than we expect
  - Electricity and computers changed the economy over 50 years

Average income per person in the U.S.



Share of GDP Paid to Capital (Nonfarm Business)



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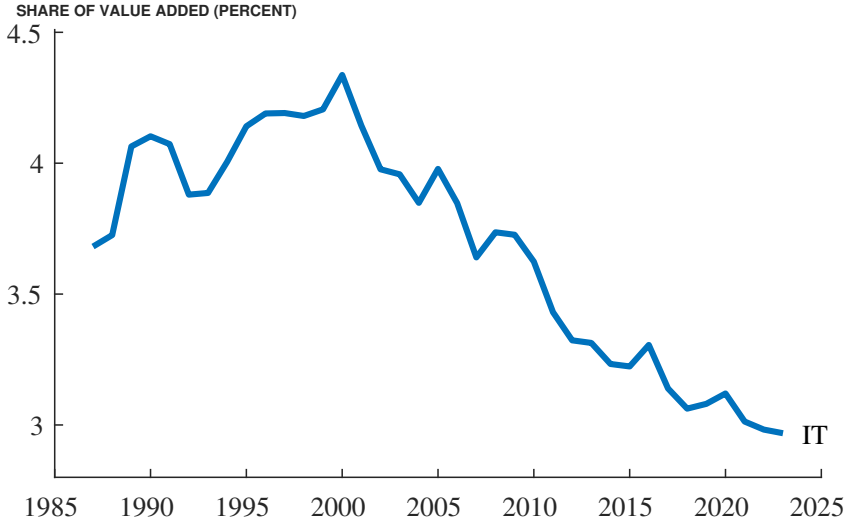


Computers are everywhere, but rapid price declines dominate — weak links

Weak Links

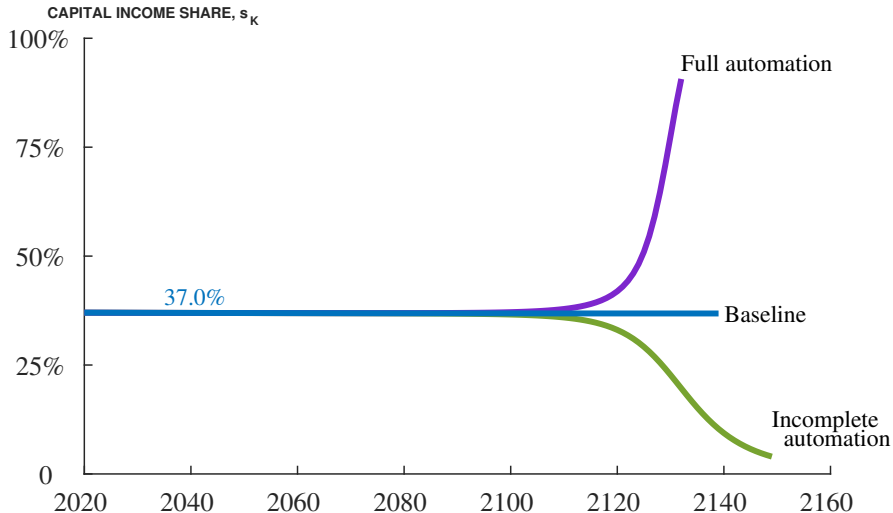
- Firm production requires the successful completion of a number of tasks
  - A weak link framework
  - Failing at sourcing inputs or quality control or timely delivery or other tasks can be very detrimental
  - Examples: the O-ring of the space shuttle Challenger, or supply chains during Covid-19, or the ASML machines that manufacture computer chips
- Automation: use rapidly-improving machines instead of slowly-improving people
  - Large cost savings in long run as we automate a rising share of tasks
  - Talented people are the scarce input

The weak links / bottlenecks are the source of scarcity and hence earn high returns

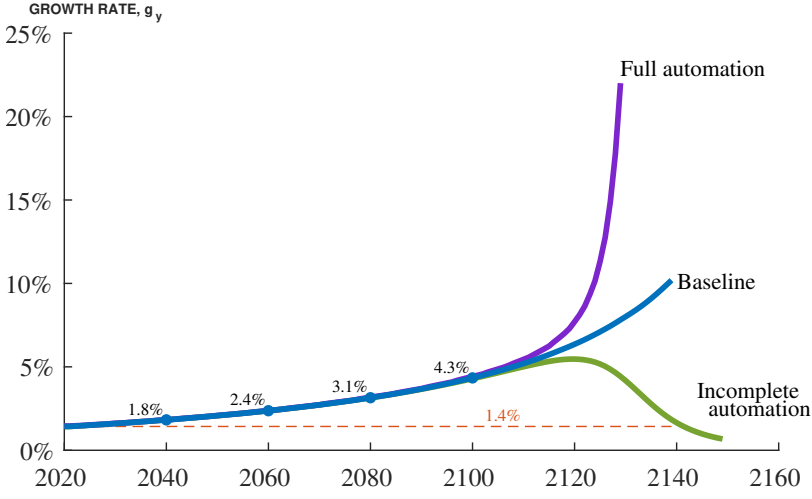
Simulations of a Model (Jones and Tonetti, 2026)

- Model of our economic future
  - Ideas are the source of long-run economic growth
  - Production of goods and ideas involves weak links
  - Automation of both goods and idea production occurs endogenously over time
  - Calibrate to historical data
- Features both of the key ingredients from the two scenarios
  - Positive feedback: automation $\rightarrow$ new ideas $\rightarrow$ more automation
  - Weak links limit the effect of automation

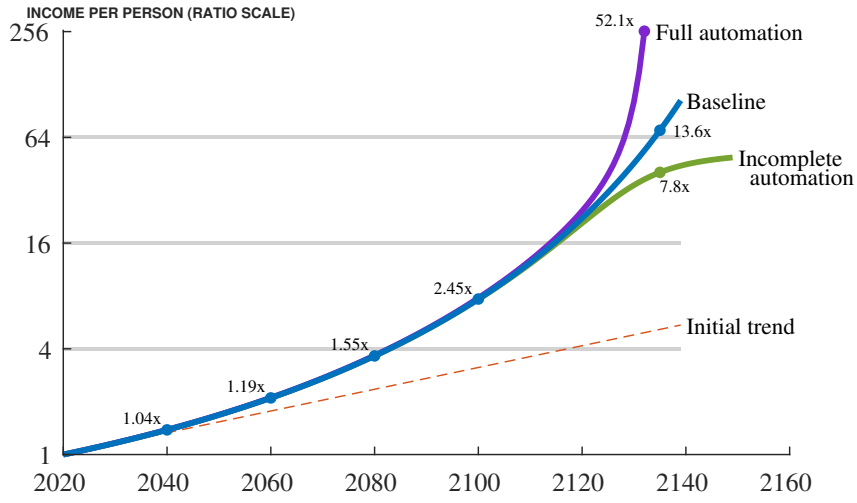
Simulating the Future: Capital Share



Simulating the Future: Economic Growth



Simulating the Future: GDP per Person



Summing Up

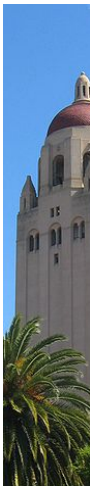
- Growth could indeed explode — but slowly!
  - Weak links make the transformation gradual
  - But as weak links are automated away, flywheel effects dominate

Jobs

- Geoff Hinton in 2016: We should stop training radiologists
  - But more radiologists today and higher pay!
- How to understand? Weak links!
  - Jobs are collections of complementary tasks — radiologists do more than just read scans
  - "Weak links" $\Rightarrow$ Automating 75% of tasks can raise wages — radiologists
  - Some jobs: A.I. automates all tasks $\Rightarrow$ wages go down — Uber drivers
- A.I. has nuanced effects on jobs and the labor market

Inequality and Meaningful Work

- Historically, labor is the main asset that many people trade to consume.
  - Likely to change in the future
- The world where A.I. “changes everything” is a world where GDP is incredibly high
  - The size of the pie available for redistribution is enormous
  - Rich countries already engage in lots of redistribution, but more may be needed?
  - Transition hard?
- As we get richer, we naturally work less — this is a good thing!
- But there is also good, meaningful work
  - We may choose to value experiences involving people (arts, music, sports)
  - Retirement!



Catastrophic Risks?

Can we use economic analysis to think about the serious risks?

Two Versions of Existential Risk

- Bad actors:
  - Could use Claude/GPT-8 to cause harm
  - E.g. design a virus that is more lethal than Ebola and takes 3 months for symptoms
  - Nuclear weapons mangeable because so rare; if every person had them...
- Alien intelligence:
  - How would we react to a spaceship near Pluto on the way to Earth?
  - “How do we retain power over entities more powerful than us, forever?” (Stuart Russell)

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- Better intuition
  - VSL = \$10 million
  - To avoid a mortality risk of 1% $\Rightarrow$ WTP = $1\% \times \$10$ million $= \$100,000$
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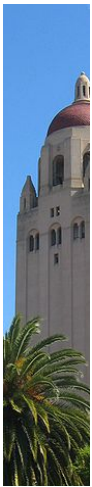
Incomplete: ignores the "effectiveness" of mitigation, but correct intuition; see paper.



Final Thoughts

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- How much did the internet change the world between 1990 and 2020?
  - How much will A.I. change things between 2015 and 2045? More or less?
  - I believe the answer is much more
  - Just because changes take 30 years instead of 5 years does not mean that the ultimate effects will not be large
- We should use the intervening years to prepare for the changes
  - Political economy and inequality
  - Easy to justify spending 1/3 of 1% of US GDP on safety = $100 billion!
  - Exernalities and race dynamics: A.I. labs do not internalize the risks to all of us
  - Should we tax GPUs and use the revenue to subsidize safety?

Talk based on material from several papers

- Aghion, B. Jones, and C. Jones (2019) “Artificial Intelligence and Economic Growth”
- Jones (2024 AER Insights) “The A.I. Dilemma: Growth versus Existential Risk”
- Jones (2025) “How much should we spend to reduce A.I.’s existential risk?”
- Jones and Tonetti (2026) “Past Automation and Future A.I.”
- Jones (2026) “A.I. and Our Economic Future” (for *JEP*)