

THE RISE OF THE MACHINES: AUTOMATION, HORIZONTAL  
INNOVATION AND INCOME INEQUALITY  
BY: DAVID H'EMOUS & MORTEN OLSEN

Discussed by: Ofer Setty, Tel Aviv University

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Three important trends over the past 50 years in the US:

- ▶ College premium increase (31% since 1963)
  - ▶ In conjunction with an upward trend in relative supply of the high-skilled
- ▶ Wages at the bottom of the income distribution stagnated
- ▶ Labor share declines

Also: the rise of machines...worth documenting

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e.g., Krusell, Ohanian, R'ios-Rull and Violante (2000)
  - ▶ But *why* innovation has been directed towards automation?

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  - ▶ But *why* innovation has been directed towards automation?
- ▶ Technology augments either high-skill or low-skill labor,  
e.g., Goldin and Katz (2008)
  - ▶ No role for labor-replacing technology  
(and thus for declines in low-skill wages)

## ► Inputs

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2. Low-skilled workers
3. Machines/automation
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## ▶ Two types of technological progress

▶ More products (horizontal innovation)

▶ Automation (secondary innovation)

-) Allows for replacement of low-skilled workers

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- ▶ Phase III:
  - ▶ Cost of creating automation (high-skill) increases  $\Rightarrow$  balance between automation and labor
  - ▶ Steady state with constant share of of automated products

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## PAPER'S CONTRIBUTION

1. A methodological contribution:
  - ▶ A framework to think about: automation, growth, skills, inequality...
  - ▶ The model is flexible enough to handle various scenarios and extensions
2. Model's predictions for the economy phases:
  - ▶ Phase I - not a big role for machines
  - ▶ Phase II - consistent with stylized facts:
    - ▶ Explains well the increase in skill premium
    - ▶ Labor share depends on technological assumptions
    - ▶ Low wages may increase or decrease
  - ▶ Phase III is where the model has a clear prediction!

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“The future’s not ours to see” ...but still some thoughts:

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  - ▶ Depends on a parameter ( $k$ ) that governs the concavity of automation
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- ▶ **What about artificial intelligence?**
  - ▶ Machines substitute the high skill
  - ▶ What do we do?



# NEW JOBS

