Discussion of

COVID-19 and Implications for Automation

Chernoff and Warman

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Chernoff and Warman (2021)

Main Premise: Shocks could accelerate secular trends in the economy

- Automation is an ongoing trend
- COVID-19 brings in high viral transmission risk
- Firms likely to substitute away from labor to capital (robots, AI)
- Women more exposed to automation and virus transmission risks

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Main Implication: COVID-19 pandemic could accelerate automation with more adverse effects on women

My Discussion

- **Comments on the methodology**

  $\longrightarrow$Discussion of two indices: transmission and automation

- **Gender gap in automation threat**

  $\longrightarrow$ Are effects likely to be very uneven?

- **Automation dynamics in dangerous occupations**

  $\longrightarrow$ Can the past tell us something?

Methodology

Quantify the viral transmission and automation risks using two *separate* indices

1. Viral transmission index: based on
   - physical proximity
   - face-to-face discussions
   - exposed to disease or infections
   - the average of outdoors, exposed to weather and outdoors, under cover

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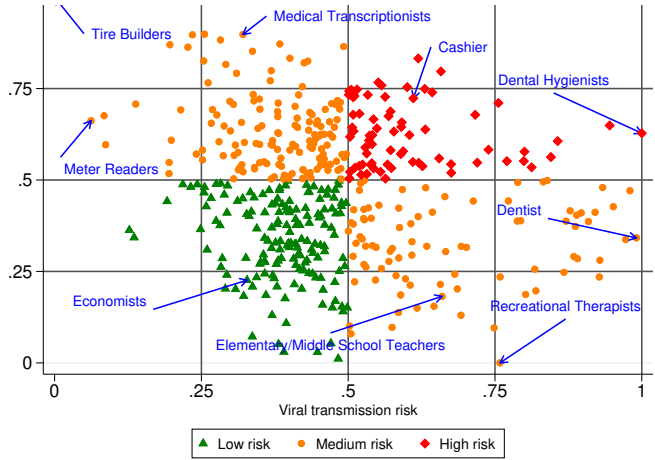
2. Routine task intensity for occupation i is defined as:

$$RTI_i = RC_i + RM_i - NRA_i - NRI_i - NRM_i$$

using routine cognitive (RC), routine manual (RM), non-routine analytical (NRA), interpersonal (NRI) and manual variables (NRM).

Risk of automation and transmission



A tale of two indices

- The paper uses two *separate* indices and identifies high risk of automation and transmission with each index ≥ 0.5
- Are the risks orthogonal to each other? The construction of indices does not take into account interactions.
- Routine task intensity for occupation i is defined as:

$$RTI_i = RC_i + RM_i – NRA_i – NRI_i – NRM_i$$

- If the non-routine component of the occupation has high transmission risk, it is less likely to be automated.
- A regression-based analysis with interactions would be useful.
- How about a two-dimensional index?

Gender gap in automation threat

	Females					Males				
	Automation	Transmission Risk	Both ≥0.5	Both ≥0.4	Both <0.5	Automation	Transmission Risk	Both ≥0.5	Both ≥0.4	Both <0.5
Overall	0.451	0.562	0.243	0.551	0.191	0.444	0.456	0.120	0.422	0.434
	(0.187)	(0.159)	(0.429)	(0.497)	(0.393)	(0.167)	(0.132)	(0.325)	(0.494)	(0.496)

- Mean values for the automation index are similar for men and women but transmission index is higher for women.
- Does this mean women are at higher risk of losing their jobs to robots?

Gender gap in automation threat?

From *The "End of Men" and Rise of Women in the High-Skilled Labor Market* by Cortes, Jaimovic and Siu (2018)

- Conditional on being a college-educated man, the probability of working in a cognitive/high-wage occupation has fallen.
- This contrasts starkly with the experience for college-educated women.
- A greater increase in the demand for female-oriented skills in cognitive/high-wage occupations relative to other occupations.
- Evidence for increasing importance of social skills within such occupations.

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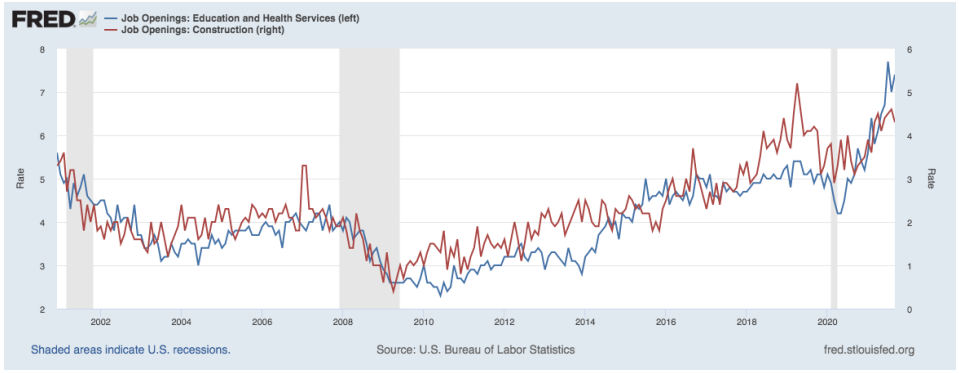
Open questions:

1. What will happen to demand for social skills that might require face-to-face interaction?
2. Are these components of these occupations necessarily automatable?

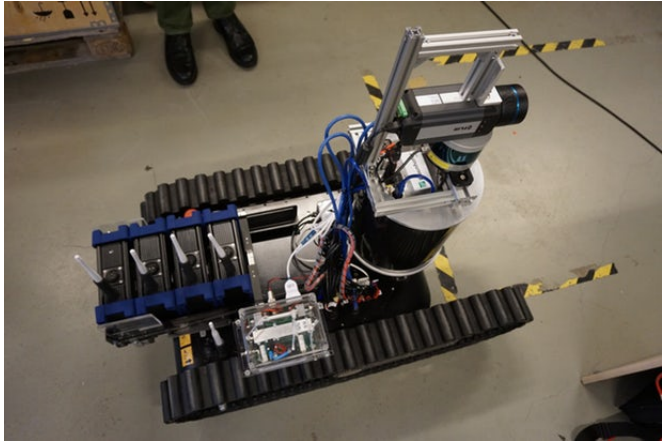
Uneven recovery in labor demand? Not so far



Fraction women in construction: 10.9%

Fraction women in education and health services: 74.6%

The 5 D's: Dirty, Dull, Dangerous, Domestic and Dextrous



Can history help us? How did the introduction of smokebot affect rescue workers?

Concluding thoughts

The mechanism is plausible but evidence is *not* yet conclusive.

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Suggestions:

- Use full information instead of summary indices and allow for interactions
- Direct test of predictions of the mechanism:
  $\longrightarrow$ historical episodes could be useful
- Little evidence in the vacancy data
  $\longrightarrow$ need to consider uneven impact on labor supply of women and older workers