Work from Home Before and After the COVID-19 Outbreak
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- How much has working from home (wfh) increased?
- What has driven this change?
- How persistent will the rise in wfh be?

Summary

- Online survey of commuting/working from home (WFH) choice.
  - Questions about days worked and days commuted previous week May 2020 - June 2021 (WFH ≡ worked – commuted).
  - Same questions retrospectively for February 2020.
  - If commuting February 2020, questions about main reason (WFH not possible, not allowed by employer, or not preferred by worker).
- Document evolution (persistence) of WFH over that year.
- Model of commuting/WFH choice.
- Use model and survey to quantify relative importance for persistence of
  - sustained health risk (making WFH temporarily preferable for workers)
  - exogenous change in employers that allow WFH (making feasible WFH which has always been preferable for workers).
- Predict persistence of WFH going forward.

Real-Time Population Survey

- National labor market survey of adults aged 18-64, April 2020 – June 2021 (WFH from May 2020).
- Designed by the authors, fielded online by Qualtrics.
- Available for use by others.
- Advantages over CPS:
  - RTPS: days WFH ≡ days worked – days commuted;
    CPS: days WFH "because of the coronavirus pandemic."
  - Same questions retrospectively for February 2020.
  - Questions about why not WFH in February 2020.

Model

- Firms and workers always aligned in WFH/commute choice.
- Firm policy exogenous, worker choice endogenous.
- If exogenously allowed, worker WFH/commute choice depends on
  - health risk in workplace,
  - productivity of working from home.
- With pandemic:
  - health risk in workplace rises,
  - percentage of employers that allow WFH exogenously increases.
  - productivity of working from home does not change (variation across sectors but no improvements in WFH preparations or technology),
- Use this to quantify relative importance of health risk vs. exogenous increase in percentage of employers that allow WFH.

Model: WFH rise due to "substitution"

- WFH rise driven by increase in health risk (+ exogenous increase in % of WFH-allowing firms).
- Pre-pandemic:
  - WFH **worse** than commuting for both firms and workers.
  - % of WFH-allowing firms exogenously low but WFH **ban not binding**.
- Pandemic:
  - Health risk rises, makes WFH temporarily better than commuting for both firms and workers.
  - % of WFH-allowing firms exogenously increases.
    → WFH rises.
- Post-pandemic:
  - Health risk falls, makes WFH again worse than commuting for both firms and workers.
  - % of WFH-allowing firms exogenously unchanged.
    → WFH falls.

Model: WFH rise due to "adoption"

- WFH rise driven by exogenous increase in % of WFH-allowing firms.
- Pre-pandemic:
  - WFH **better** than commuting for both firms and workers.
  - % of WFH-allowing firms exogenously low and WFH **ban binding**.
- Pandemic:
  - Health risk rises, but WFH/commuting ranking unchanged.
  - % of WFH-allowing firms exogenously increases.
    $\rightarrow$ WFH rises.
- Post-pandemic:
  - Health risk falls, makes WFH again worse than commuting for both firms and workers.
  - % of WFH-allowing firms exogenously unchanged.
    $\rightarrow$ WFH falls.

Substitution & adoption related to survey

- If "substitution" dominates: most respondents will say they did not WFH pre-pandemic because they preferred not to.
  - Answer implies WFH was worse for workers.
  - Per model, if worse for workers, worse for firms.
    $\rightarrow$ WFH rise driven by health risk making WFH temporarily better.
- If "adoption" dominates: most respondents will say they did not WFH pre-pandemic because they were not allowed to.
  - Answer implies WFH was better for workers (implicit assumption that if WFH was both not allowed and not preferred by workers, then workers answer not allowed as the reason).
  - Per model, if better for workers, better for firms (but firms did not realise this, otherwise they would have allowed WFH .
    $\rightarrow$ WFH rise driven by increase % of WFH-allowing firms making what was always better feasible.

Reinterpretation with single exogenous shock

- Three exogenous parameters:
  - Health risk (low pre-pandemic, rises during pandemic, falls post-pandemic).
  - % of WFH-allowing firms (low pre-pandemic, rises during pandemic, unchanged post-pandemic).
  - Productivity of WFH (unchanged throughout).
- Same sequence of events could be based on a single (health) shock.
  - Productivity of WFH driven by aggregate learning by using.
  - % of WFH-allowing firms endogenously determined by firm choices.

  (See this merely as reinterpretation.)

Reinterpretation with single exogenous shock

- Taking the model literally, under (dominant) adoption:
  - Pre-pandemic: most firms (exogenously) have wrong policy, no WFH despite being beneficial.
  - Pandemic: increased health risk, unchanged WFH productivity, exogenous rise in % of WFH-allowing firms.
  - Post-pandemic: reduced health risk, exogenous % of WFH-allowing firms unchanged.
- Flexible reinterpretation:
  - Pre-pandemic: with aggregate learning-by-using in WFH, no WFH was best uncoordinated choice for firms.
  - Pandemic: increased health risk leads to simultaneous allowance of WFH by many more firms.
  - Post-pandemic: reduced health risk, aggregate learning-by-using in WFH now makes allowing WFH better choice for more firms.
- Consistent with same sequence of events, survey responses, and implications for the future of WFH.
- Single exogenous shock (increased health risk) drives changes in firm policies and WFH prevalence.

Other considerations: coordination and disagreement

- Coordination and multiple-equilibria in social norms:
  - In the model, worker WFH/commute choice unrelated to co-workers'.
  - In reality, commuting may be more worthwhile if many co-workers are commuting too.
- Firms-worker disagreement:
  - In the model, firm policy exogenous, worker choice endogenous.
  - In reality, firms and workers may not have aligned interests in WFH/commute choice.

Alternative with firms-worker disagreement

- Pre-pandemic:
  - wfh worse than commuting for firms but better for workers.
  - % of wfh-allowing firms low.
- Pandemic:
  - Health risk rises, makes wfh temporarily better for firms.
  - % of wfh-allowing firms endogenously increases.
    → wfh rises.
- Post-pandemic:
  - Health risk falls.
    * If wfh productivity unchanged, % of wfh-allowing firms endogenously falls.
      → wfh falls.
    * If wfh productivity changes and improves enough, % of wfh-allowing firms can remain high.
      → wfh remains high.
- Story also consistent with big rise in wfh and most respondents saying they did not wfh pre-pandemic because they were not allowed to.
- But predicts wfh falls post-pandemic unless wfh rises enough.
- Can be enriched with wfh set by bargaining instead of unilaterally by the firm (as in this story) or exogenously (current model).

Concluding

- Very useful data produced by the authors.
- Suggestive interpretation through lens of model.
- To what extent is interpretation data/model driven?
- Would expect that evolution of WFH is affected by:
  - Evolving effectiveness and adoption of WFH technology
    (heterogeneity by task also).
  - Important coordination issues
    (prevalence and timing).
  - Firm and worker preferences about WFH not necessarily aligned.
  - Firm WFH policies are endogenous
    (asymmetry allow/disallow).
- How will WFH policies be set going forward?