A Macroeconomic Model of Healthcare Saturation, Inequality and the Output-Pandemia Tradeoff

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Contribution

Macro model with heterogeneous agents and non homothetic demand for
health to investigate redistributive effects of pandemics and lockdown policies

- Novel component
  - ▶ pandemics as shock to subsistence level of health $\overline{h}$
  - ▶ Size of the shock depends on utilization rate of the economy m

  $$\overline{h} = h^* + z_t f(m_t K)$$

  - ▶ pandemics uses up a fraction of health capacity $\overline{h}$
  - ▶ $\overline{h}$ is larger when the level of economic activity m is higher

- Reduced form to capture that higher level of economic activity implies
  higher infection rate and more capacity is used up by covid cases

Equilibrium responses to a shock to $\overline{h}$

Main ingredients

1. Total H stock fixed
   - ▶ Increase in $\bar{h}$ reduce supply of health, price p^h must increase

2. GHH preferences
   - ▶ remove wealth effect on labor supply, equilibrium L does not change
   - ▶ aggregate states C, Π also do not change

3. Agents heterogeneity
   - ▶ type 1 are entrepreneurs: supply l at wage w and own endowment of health goods
   - ▶ type 2 are workers: supply l at wage w
   - ▶ Increase in health prices redistribute from workers to entrepreneurs

Result: pandemics has no aggregate effects but strong redistributive effect

Normative analysis

- competitive equilibrium not efficient because of an externality
- size of shock to $\overline{h}$ depends on level of economic activity m chosen by firms without internalizing its effect on health capacity:

$$\underbrace{(1-\alpha)(m_t K)^{-\alpha} L_t^{\alpha}}_{\text{Private benefit}} = \underbrace{\chi_0 m_t^{\chi_1 - 1}}_{\text{Private cost}} + \underbrace{zK f'(mK) p_h}_{\text{Social cost}}$$

- In order to restore efficiency planner curbs economic activity (lockdown), to reduce pressure on health capacity
- Lockdown implies smaller increase in $p_h \rightarrow$ less inequality
- Planner might also use transfers to achieve a more equitable allocation

Key takeaways

1. Positive side: do not need SIR block to do macro analysis of pandemics

   ▶ Provide evidence that Non-SIR factors are relevant for GDP declines

2. Normative side: lockdowns are desirable

   ▶ restore efficiency
   ▶ reduce inequality

   Provocative findings, but let me raise some issues with both of them

Econ-Epi without SIR?

- Absence of SIR block simplifies pandemic evolution and pandemic response to a sequence of static problems
- Analytically tractable
- Not necessarily appealing for two reasons:
  - ▶ SIR provides a theory of endogenous evolution of pandemics. It predicts how long a pandemic is going to last, how widespread is going to be, and how these features of pandemics depend on policies. In this paper all these features are exogenously determined, and not affected by policy
  - ▶ Misses key dynamic trade-off between lost output today and reduced infections in the future

Empirical Support for Non-SIR factors

Investigate the role of healthcare system saturation in the pandemics

- Cross-country regression where GDP drop in 35 countries is explained by:
  - ▶ Stringency of lockdown
  - ▶ Non SIR variables: hospital beds, non-covid excess mortality
  - ▶ SIR variables: covid cases, covid deaths
- Findings: non SIR variables are significant and have larger effects
- Interpret as evidence that non-SIR variables are main drivers of gdp drop

Two issues

- Measurement: non SIR is only variable contemporaneous to gdp drop
  - ▶ Likely to bias result in favor of non SIR variables
- Model consistency:
  - ▶ In model non-covid deaths $\overline{h}$ only affect output through lockdown.
  - ▶ Since lockdown is a control in regression, model implies non covid deaths insignificant
  - ▶ Non covid deaths are likely to capture other channels through which covid affects gdp that are not in the model, such as fear

Are lockdowns good for the poor? Labor markets

- In the paper lockdowns lower price of health goods. Lockdowns good for the poor

- Many additional dimensions of labor market heterogeneity between rich and poor that are relevant for the impact of lockdowns

  ▶ Poor have little wealth, and that makes them more vulnerable to loss in labor income due to lockdown (Kaplan, Moll, Violante, 2021)

  ▶ Poor works in occupations that are less tele-workable, hence more affected by lockdown

  ▶ Poor works in sectors that are central to the spreading and hence more targeted by lockdowns (retail, large events, see Azzimonti, Fogli, Perri and Ponder, 2021)

Maybe impact of lockdowns on labor markets not so good for the poor

Are lockdowns bad for the rich? Stock markets

- In the paper lockdowns lower price of health stocks, which are held by rich only. Lockdowns bad for the rich

- Health stocks only one component of stock market

- Other components (in particularly tech, Amazon, Zoom), arguably benefited from lock down
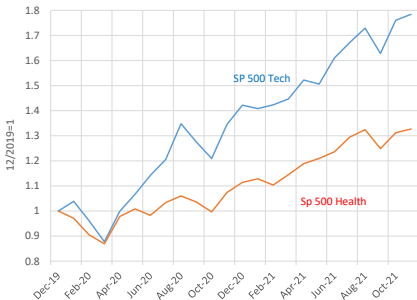
Maybe impact of lockdowns on stock market not as bad for the rich

Conclusions

- Paper provides a tractable model of macroeconomic and redistributive effects of a pandemic
- Provides interesting insights on the importance of health capacity
- Framework a bit too stylized for serious quantitative assessment of optimal policies and their impact on pandemic and inequality