Comments on: "The macroeconomic implications of the Gen-AI economy"

by Pablo Guerron[1] Tomoaki Mikami[1] and Jaromir Nosal[1]

[1]Boston College

Maria A. Amado

BdE-ESCB ChaMP Network

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Summary

- **Main goal:**
  - Study the impact of gen-AI on the economy through data collection analysis and distribution

- **How they do it:**
  - Multi-sector model that captures the role AI in (1) improving customer management and retention in all sectors and (2) overcoming frictions of customer base buildup
    - 3 sectors with different exposure to AI.
    - **Sector 1:** highly exposed, produces intermediate inputs and marketing services used by all sectors to build their customer base (demand).
    - **Search friction:** In order to sell their goods to households/other sectors, the producers in each sector have to match with a retailer.
    - In equilibrium, the likelihood of meeting a retailers depends on the relative stock of marketing capital in each sector.
    - Marketing services allows producers to increase their probability of selling their goods and increase their customer base.

Summary

- **The gen-AI shock:** $(+)$ productivity shock in sector 1, $\downarrow$ cost of sector 1's services as int. input and cost of marketing services
  - Propagates downstream over the network and reduces matching cost between retailers and intermediate producers.
- **Findings: Transitory productivity shock, 1%**
  - Capital and labor reallocate away from gen-AI sector towards manufacture and services.
  - Productivity gains in AI sector generate significant spillovers to the rest of the economy $\rightarrow$ increase in agg. output in all sectors.
  - Search frictions (as opposed to I-O linkages) drive most of the spillover effects.
- **Permanent productivity shock of 10%**
  - Increase of 8% in GDP in a 10 year-horizon
  - No impact on aggregate labor: Permanent reallocation of labor from AI-intensive sector to other sectors
  - Permanent increase in aggregate capital (I-O linkages dominate)
  - Significant spillovers to the rest of the economy
  - Search frictions drive about half of the response, I-O explains the rest.

Comments

- **General Comment:** In sum, a great contribution that uses a simple stylized model to capture the impact of an **unexplored channel** through which AI-technologies can impact long-run growth
- It might have room to include some additional elements that make the mechanisms richer/complete without losing tractability.

Comment I

Paper's goal and long-run target

- The paper focuses on the broad macroeconomic effects of gen-IA through its impact on a **specific and concrete dimension of gen AI that improves sales and customer base management.**
- The paper makes it clear from the beginning that its contribution goes beyond the labor market effects, as in (Acemoglu and Restrepo (2018), Acemoglu et al. 2022 etc).
- And the nature of the labor reallocation in the model is not related to automation and substitution of tasks (Autor, Leavy and Murnane (2003), Acemoglu and Autor (2011))

Comment I

Paper's goal and long-run target

- Rationalizes Goldman Sachs' predictions of Gen-AI's 7% GDP impact over 10 years on the global economy.
  - GS projections take into account the impact of gen-AI on **different dimensions of the labor market**:
    - **Work displacement/automatization of tasks:** Gen AI could substitute up to one-fourth of current work in US and Europe
    - **Technology-driven creation of new tasks in the long run:** new occupations emerge directly from AI$\rightarrow$ higher aggregate income $\rightarrow$ higher demand for workers in other non-AI sectors.
  - *Overall, the model's preditions in terms of long-term labor, sectoral reallocation, higher labor productivity, are not necessary qualitatively at odds with those underlying the GS predictions: more microfoundations on the impact of the gen-AI shock in the labor market.*

Comment II

Effect on employment

- In response to the productivity shock, there is frictionless labor reallocation from sector 1 to sectors 2,3.
- Muted effect on total labor "short run" and "long run". Only a slight decline in labor share.
- *How easy it is for a film editor/sound designer/advertiser (sector 1) to reallocate to the construction sector (sector 3) as a result of the marketing friction?*
- The model would benefit from introducing an element of labor market rigidity to capture a costly process of workers reallocation to new sectors (Bouakez et al, 2011, Cardi and Restout, 2015, Cardi et al. 2020)
    - IML: Workers can experience a utility loss when shifting hours worked from sector 1 to sectors 2 or 3 (?)

$$l_t = \left[\psi^{-1/\epsilon}(l_1)^{\frac{\epsilon+1}{\epsilon}} + (1-\psi)^{-1/\epsilon}(l_{2,3})^{\frac{\epsilon+1}{\epsilon}}\right]^{\frac{\epsilon}{\epsilon+1}}$$

Digression: Implications for monetary policy

- This is a model without nominal rigidities, so we cannot derive any conclusions about optimal monetary policy
- **Extension:** gen-AI impact in a Networks + NK (sector specific calvo pricing parameters ϕ_s) in the spirit of (Ghassibe 2021, Pasten, Schonle, and Weber, 2020)
  - In this setup, price stickiness propagates downstream over the network
    - *If sector 2 is very sticky and is a major supplier of sector 3, then sector 3 is effectively a very sticky sector.* $\frac{\partial \log p_3}{\partial \log w} = \phi_3 \rho_3$
  - Production networks may amplify nominal rigidities and increase monetary non-neutrality: $\frac{\partial \log rGDP}{\partial \log m} = 0$ if $\phi_i = \rho_i = 1$ for all i (fully flexible prices)

Digression: Implications on monetary policy

- AI is significantly reducing frictions in firms' price setting in different sectors: retail, e-commmerce, travel
  - Amazon's AI-driven pricing system changes product prices 2.5 million times per day
  - Expedia, Airbnb, Lufthansa: AI-based models to automatically set prices based on location, seasonality, competitor pricing, booking behavior
  - Walmart, Zara use AI to optimize discount strategies, predict demand, adjust prices across locations, etc.

Digression: Implications on monetary policy

- Can AI impact monetary non-neutrality?
  - if the price in sector 1 becomes fully flexible: $\phi_1 = 1$? Does the economy become less "sticky"? does MP have less real effects?
  - Should we rethink monetary policy in a context in which pricing frictions can be significantly reduced in the long run?

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