Discussion of "Artificial intelligence and monetary policy" by Simone Lenzu

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INFLATION DASHBOARD
Headline Inflation (YoY)
Core Inflation (YoY)
INFLATION COMPONENTS
Services (YoY)
Goods (YoY)
Food (YoY)
Energy (YoY)
INTEREST RATE CURVES
Government Bond Yield Curves
POLICY RATE
Current Rate
5.25%
Next Meeting
5.25%
Forecast (Q4)
4.75%
NEURAL NETWORK MODEL
MACROECONOMIC OVERVIEW
Real GDP Growth (QoQ)
LABOR MARKET
Unemployment Rate
3.8%
Participation Rate
62.4%
FINANCIAL CONDITIONS
Financial Conditions Index
RISK ASSESSMENT
CENTRAL BANK
MONETARY STABILITY
FINANCIAL STABILITY
MONETARY POLICY IMPLEMENTATION
THE INFLATION TARGETING FRAMEWORK
FINANCIAL STABILITY AND CENTRAL BANKS

A bold paper addressing the question of our times for central banks

- How does AI affect monetary policy?
  - 1. Transmission: supply and demand
  - 2. Structural transition: r^* and y^*.
  - 3. Financial stability
- Points 1 and 2 are analyzed via a New Keynesian model.

The analytical framework

- Supply side:

$$\pi_t = \lambda\chi\hat{y}_t + \lambda\left(\hat{w}_t + \hat{\tau}_t - \hat{a}_t\right) + \beta\mathbb{E}_t\left[\pi_{t+1}\right],$$

- Demand side:

$$\hat{y}_t = \mathbb{E}_t\left[\hat{y}_{t+1}\right] - \frac{1}{\sigma}\left(\hat{r}_t + \hat{s}_t\right)$$

- Taylor rule

$$i_t = r_t^* + \bar{\pi} + \phi_\pi\left(\pi_t - \pi^*\right) + \phi_x x_t$$

- Potential output/ natural rate

$$r_t^* = -\log\beta + \sigma\mathbb{E}_t\left[\Delta y_{t+1}^*\right]$$

Example: scale effects

- Elasticity χ governs how strongly marginal cost responds to cyclical activity.
- AI implies better forecasting, scheduling, predictive maintenance $\rightarrow$ firms accommodate better demand expansions $\rightarrow \downarrow \chi$
- But, if AI reinforces just-in-time production or tightens dependencies across supply chains $\rightarrow$ flower buffers $\rightarrow \uparrow \chi$

Comment: policy implications

- Section 5 (Policy implications): "AI may alter the inflation - real activity trade-off. [...] the effective slope of the Phillips curve becomes flatter."
- My take: that depends on how central banks behave (McLeay and Tenreyro, 2019) plus the impact of AI on product substitutability

Optimal policy in the New Keynesian model...

- In the standard NK model ($\Omega = 0$), optimal policy maximizes:

$$\mathbb{E}_0 \left[\sum_{t=0}^{\infty} \beta^t \left(\pi_t^2 + \frac{\kappa}{\varepsilon} x_t^2 \right) \right]$$

subject to the Phillips curve

$$\pi_t = \kappa x_t + \beta \mathbb{E}_t \left[\pi_{t+1} \right].$$

- Inflation - output trade-off:

$$x_t = -\varepsilon \sum_{s=0}^{t} \pi_s, \text{ if commitment,}$$

$$x_t = -\varepsilon \pi_t, \text{if discretion.}$$

...only depends on the elasticity of substitution across varieties

- The question is then, how does the elasticity of of substitution ε will change with AI?
- AI tends to standardize products and production processes $\rightarrow$ Goods become closer substitutes $\uparrow \varepsilon$
- AI can also create product differentiation through strong brand ecosystems and proprietary AI capabilities $\rightarrow$ Goods become less substitutable $\downarrow \varepsilon$
- AI, however, affects monetary policy implementation (as discussed in the paper)

Conclusions

- Great paper: (very) important question,
- My two cents:
  - Justifying a bit more the core mechanism would reinforce credibility
  - Additional mechanisms may potentially also play a role (“cheap comment”)