EUROPEAN CENTRAL BANK

EUROSYSTEM

[ECB Public]

Discussion of Paul, Ulate and Wu

A Macroeconomic Model of Central Bank Digital Currency

01/07/2024

Katrin Assenmacher

DG Macroprudential Policy & Financial Stability

Disclaimer

The views expressed here are those of the presenter and do not necessarily reflect those of the ECB.

General remarks

Nice paper – clear and well written.

Very relevant topic in view of the **consequences** that a potential introduction of a **CBDC** may have.

- The paper develops a **partial model** for **deposits**,
- Then integrates it into a **full DSGE model**,
- And analyses **deposits spreads**, **welfare** and **monetary policy transmission** upon introduction of a **CBDC**.

Can only recommend reading it!

The mechanics

Welfare change of CBDC introduction operates through the **endogenous deposit share**, $\omega_{\mathcal{L}}^{d}$, and is **U-shaped.**

- CBDC reduces banks' monopoly rents,
- But induces deposit outflows that lower lending and GDP.

The **interest rate on CBDC** is key:

- At a **low CBDC rate**, CBDC does not compete with deposits, $\omega_{\mathcal{L}}^{d}$ not affected, CBDC introduction without effects on the economy.
- At a **high CBDC rate**, deposit outflows become large, bank disintermediation dominates positive effect.

Optimal CBDC rate for the US is **0.8%** for a steady-state policy rate of 2%.

Comment: One or many economies?

"... instead of studying the introduction of CBDC for a specific economy, we analyze the effects of introducing CBDC in many economies that differ in the level of their steady-state policy rates."

Calibration changes the **discount factor β**, with other parameters constant.

Appendix C.4 recalibrates five parameters to match five target relations and shows that the **welfare-maximising CBDC rate** does **not change** much.

- Does the recalibration affect **welfare changes** from a zero-interest CBDC?
- The alternative economies are still **clones** of the **US**.
- The conclusions seem to suggest a „**rule**" over the business cycle. "*Central banks can easily communicate this remuneration scheme…"*

A side remark: How to think about a negative **steady-state** discount factor?

Comment: How is CBDC introduced?

Steady state without CBDC is modelled by assuming a **CBDC interest rate** of **−100%.**

- Is this equivalent to setting the weight on CBDC, γ_{cbdc}, to zero?
- γ_{cbdc} enters the **liquidity aggregator**

$$\mathcal{L}_t = \left(\gamma_m^{-\frac{1}{\theta}} m_t^{\frac{\theta+1}{\theta}} + \gamma_d^{-\frac{1}{\theta}} d_t^{\frac{\theta+1}{\theta}} + \gamma_{cbdc}^{-\frac{1}{\theta}} cbdc_t^{\frac{\theta+1}{\theta}}\right)^{\frac{\theta}{\theta+1}}$$

- A CBDC interest rate of **−100%** seems to imply that CBDC enters the "**expenses**" side of the HH's budget constraint via the cost-of-liquidity function, but not the "**returns**" side.

CBDC introduction and welfare

A CBDC will presumably not carry interest.

Welfare gain of CBDC introduction with zero interest rate is **22 basis points**.

Assenmacher, Ferrari Minesso, Mehl and Pagliari (2023) obtain a welfare gain of about **30 basis points**.

Possible explanations for the differences:

- Introducing CBDC via an increase in the CBDC rate instead of adjusting γ_{cbdc} does not yield benefits through less liquidity costs.
- Assuming costs of holding/using cash.
- Calibration to the euro area.

Transmission of monetary policy shocks

Results match with findings under different modelling setups.

Paper	Inflation reaction*		Output reaction*	
Assenmacher, Bitter, Ristiniemi (2022)	−0.02	0	−0.04	8
Ferrari Minesso, Mehl and Stracca (2022)	0.01	0	−0.02	0
Burlon, Muñoz and Smets (2023)	0	0	0	0

* First column: Difference in peak reaction with and without CBDC in percentage points.
Second column: Difference in half life with and without CBDC in months.
Source: Assenmacher and Smets (2024)