

Monetary Policy with Reserves and CBDC: Optimality, Equivalence, and Politics

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1 Motivation and framework

- Study optimal monetary policy in the context of a neoclassical growth model where:
 - Households value liquidity, which comes in the form of deposits and currency (private and public money, resp.);
 - Banks value reserves (to produce deposits);
 - Firms do not value liquidity (though, why not?);
 - Banks are local monopolists for deposits.

2 Liquidity supply/demand

- Demand generated by MIUF for households, reserves as input for banks.
- Cost function for banks.
 - Unit cost of issuing deposits decreasing in own and aggregate reserve-to-deposit ratios.
 - Implies an externality: banks may not want to hold socially-desirable level of reserves.
- Cost function for government.
 - Unit costs of issuing currency and reserves are parameters.
- Unit costs are potentially stochastic (but not important for analysis).
- Currency sometimes referred to as CBDC (but nothing much hinges on this interpretation).

3 Optimal allocation

- Planner needs to respect demand for liquidity and resource cost of creating liquidity.
 - Question: Should planning solution involve money (an exchange medium)?
 - Answer: Probably not, but whether “microfoundations” of money demand matter likely depends on question being addressed.
- Generally optimal for reserves, currency and deposits to coexist.
- Planner adjusts quantities to equate marginal social costs and benefits.

4 Ramsey planner

4.1 Currency dominates deposits (no banks)

- Use lump-sum tax to finance real rate of return on currency.
- Standard FR if cost of issuing currency is zero.

4.2 Deposits dominate currency

- Single instrument (interest on reserves) and two distortions (monopoly and externality) implies sub-optimal outcome.
- Introducing inefficient currency can improve outcome (reduce bank monopoly power) but not all the way.
- Introducing (costless) deposit subsidy restores efficiency.

4.3 Currency and deposits coexist

- Interest on reserves, interest on currency, deposit subsidy, lump-sum tax can be used to implement optimal allocation.
- Generally not optimal to equate interest on reserves and currency (because different costs?).
- Policy should react to money-cost shocks.

5 Policy rules

- Considers deposit-only case. Optimal deposit subsidy and IOR depends on deposit-cost and reserve-cost parameters; e.g.,

$$IOR = R^* \left[1 - \left(\frac{\phi_1}{\phi_1 + \phi_2} \right) \rho \right]$$

- Am skeptical that ρ is large and that $\phi_2 > 0$ (let alone varying at high-frequency).
- Optimal CB policy (intraday credit for banks) likely makes modeled externality unimportant.
- Would have liked to see case with coexistence, with application to CBDC.
- What determines CBDC rate *vis-à-vis* IOR? (With and without optimal deposit subsidy.)

6 Recommendations

- Modeling bank market power seems important. How does it affect the principles of optimal interest rate policy (with and without CBDC)?
- Are resource costs of issuing deposit liabilities (as opposed to non-deposit liabilities) significant? Resource cost of issuing reserves? Deposit externality? Some empirical justification here would be welcome.
- Qualitative analysis could be made much simpler (and wlog) by assuming utility linear in consumption, fixing labor input, and assuming away aggregate uncertainty (cost shocks).
- All the policy rule conclusions are driven by MIUF and cost-of-producing-money technologies. Bring back more general framework for quantitative exercise?
- Overall, a very nice contribution!