

CBDC Policies in Open Economies

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We introduce CBDC into a carefully calibrated and *estimated* 2-country DSGE environment that features a realistic financial system, and policy rules for the interest rate on reserves, the interest rate on or quantity of CBDC, and taxes. The model is used to study 3 issues. First, the consequences of a hypothetical *transition* between a pre-CBDC and a post-CBDC economy. Second, the design of *optimal simple rules* for CBDC policy, and their joint optimisation with the Taylor rule for the interest rate on reserves. Third, the *open economy* effects of CBDC.

In the *estimation*, we find that financial shocks, which affect either the supply of or demand for money, account for around half of the volatility of aggregate demand and inflation, and the bulk of the volatility of balance sheets, spreads, and the exchange rate.

For the *transition*, we find strong positive effects, with long run output gains of just under 6% and long run welfare gains of just over 2% of steady state consumption. Banks are not crowded out, except modestly during a short transition period. Their balance sheets grow significantly in the long run, while their average funding cost remains approximately constant.

For *optimal simple rules*, we find that in a recession the central bank should raise rather than lower the CBDC interest rate relative to the interest rate on reserves and that, if used in this way, a countercyclical CBDC interest rate rule can partly take over the role of the Taylor rule in stabilizing inflation and output. However, while for Taylor rules real shocks dominate the welfare results, for CBDC rules financial shocks dominate. CBDC interest rate rules perform better than quantity rules, and credit gap terms perform better than inflation gap terms, with the best rule yielding welfare gains of over 0.7% of steady state consumption. A single CBDC used both as reserves and for retail transactions is inferior in welfare terms, and so is a cash-like zero-interest CBDC. With a CBDC interest rate rule, automatic fiscal stabilizers become highly effective even if implemented through lump-sum transfers. Finally, optimal policy calls for a high (over 40% of annual GDP) steady state quantity of CBDC remunerated at a high interest rate, even if this requires higher labour income taxes to balance the budget.

For the *open economy*, we find that optimized CBDC policies achieve 25% or more reductions in the volatilities of cross-border banking exposures and exchange rates. Global runs into CBDC, under prudent central bank convertibility rules, would not be runs from bank deposits but runs from government bonds. Such run shocks, even if extremely large, have very small real effects, especially when CBDC is supplied flexibly subject to an interest rate rule.