

## ECONOMIC FINDING

# Central Bank Digital Currency: When Price and Bank Stability Collide

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*When offering digital currency accounts, central banks face a trilemma: of the three goals of efficiency, financial stability, and price stability, the central bank can achieve at most two.*

Many central banks and policymaking institutions around the world are openly debating the introduction of a central bank digital currency, or CBDC, a potential watershed for the monetary and financial systems of advanced economies.

Since at least the classic formulation of Bagehot in 1873, central banks have viewed their primary tasks as maintaining stable prices and ensuring financial stability through their role as lenders of last resort. With a CBDC, two additional and significant aspects come into play. First, a CBDC may become an attractive alternative to traditional demand deposits in private banks for all households and firms. Second, and as a result, the central bank may be transformed into a financial intermediary that needs to confront classic issues of banking, including maturity transformation and the exposure to a demand for liquidity induced by “spending” shocks (runs) of its private customers.

The authors examine the interplay of these new and traditional roles to evaluate the advantages and drawbacks of introducing a CBDC relative to the subsequent reorganization of the banking system and its consequences for monetary policy, allocations, and welfare. Building on, and then departing from, existing models which reveal that the optimal amount of risk-sharing among banks requires making them prone to bank runs, the authors ask whether central banks can avoid this problem.

In the authors’ model (and to briefly summarize here), classic bank runs may still occur due to a rationing problem, when liquidating illiquid real assets at a given price level. But since a central bank controls the price level and contracts are nominal, it can avoid rationing if it prefers. By issuing more currency, the monetary authority can always deliver on its obligation, but at the risk of inflation. Thus, their model illustrates how runs on a central bank can manifest themselves in two ways: either as a classic run, caused by the rationing of real assets, or as a run on the price level.

**Figure 1 • Central Bank Digital Currency Trilemma**

*For the central bank, it is impossible to attain all three objectives at a time. When prioritizing one objective, at least one other objective has to be sacrificed.*



Now, imagine that a central bank has three goals: efficiency, financial stability (i.e., absence of runs), and price stability. The authors demonstrate an impossibility result that they term the CBDC trilemma: Of its three goals, the central bank can achieve at most two (see accompanying figure). For example: the authors demonstrate that the central bank can always implement the socially optimal allocation in dominant strategies and deter central bank runs at the price of threatening inflation off-equilibrium. If price-stability objectives for the central bank imply that the central bank would not follow through with that threat, then allocations either have to be suboptimal or prone to runs.

Bottom line: A central bank that wishes to simultaneously achieve a socially efficient solution, price stability, and financial stability (i.e., absence of runs) will see its desires frustrated. This work reveals that a central bank can only realize two of these three goals at a time.