Conceptual aspects of CBDCs – design and macroeconomic implications
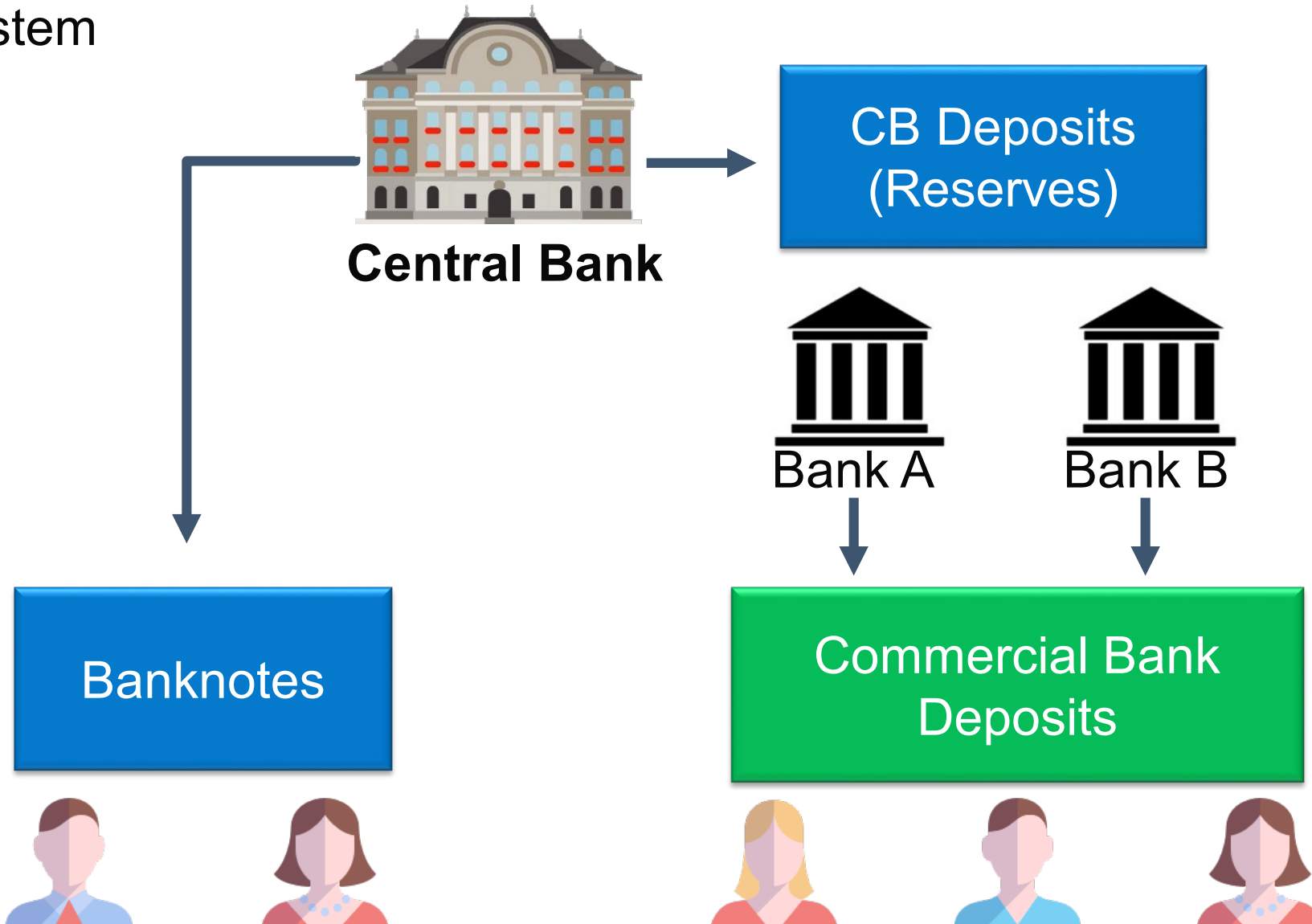
NBP-SNB Joint Seminar
Zurich, November 15-16, 2022

Thomas Moser
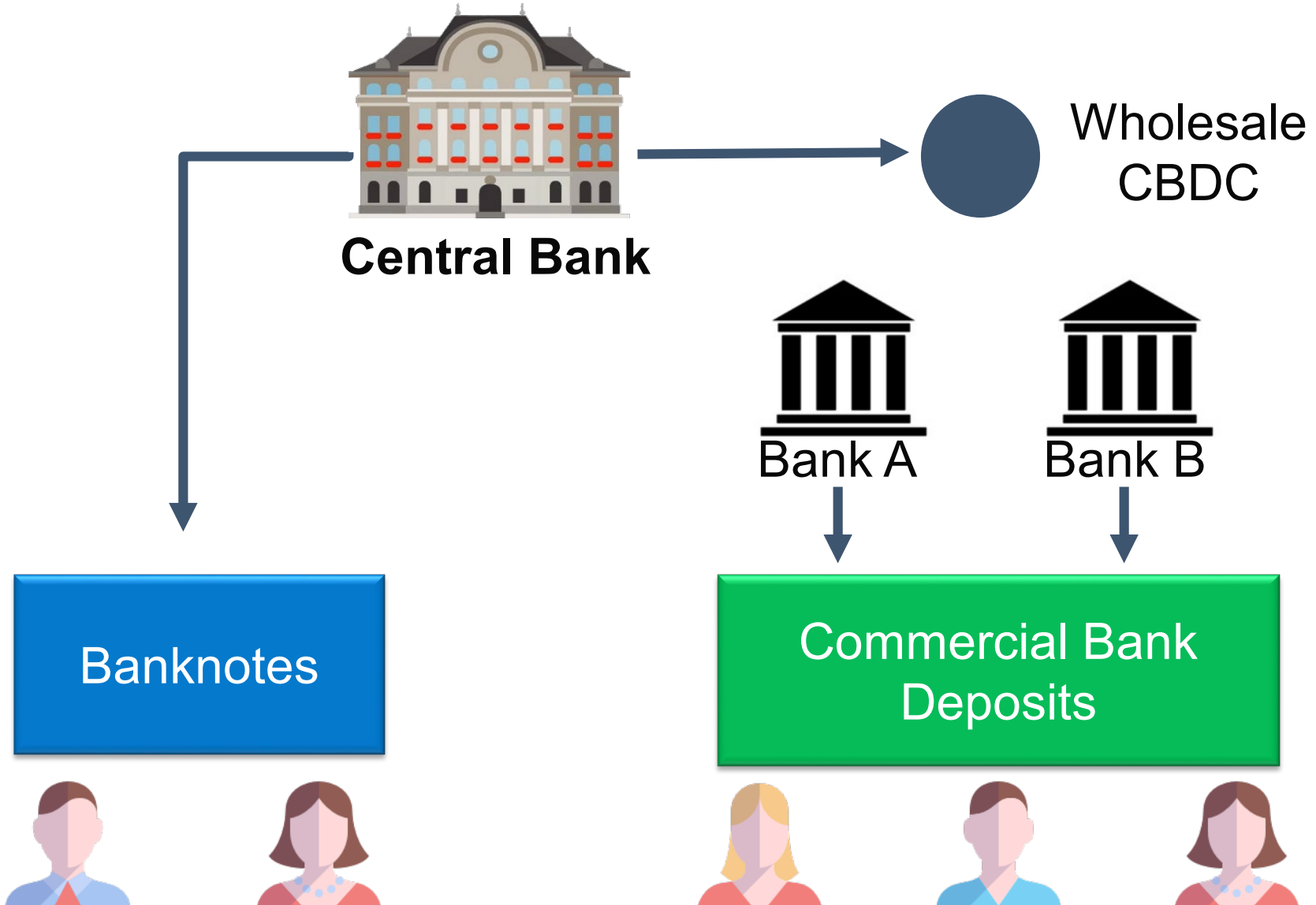Alternate Member of the Governing Board

Current System

CBDC

CBDC

Central Bank

Wholesale CBDC

Retail CBDC

Bank A

Bank B

Commercial Bank Deposits

Alternative 1:
Link DLT

Central Bank

CB Deposits
(Reserves)

Link RTGS
and DLT

Bank A   Bank B

Banknotes

Commercial Bank
Deposits
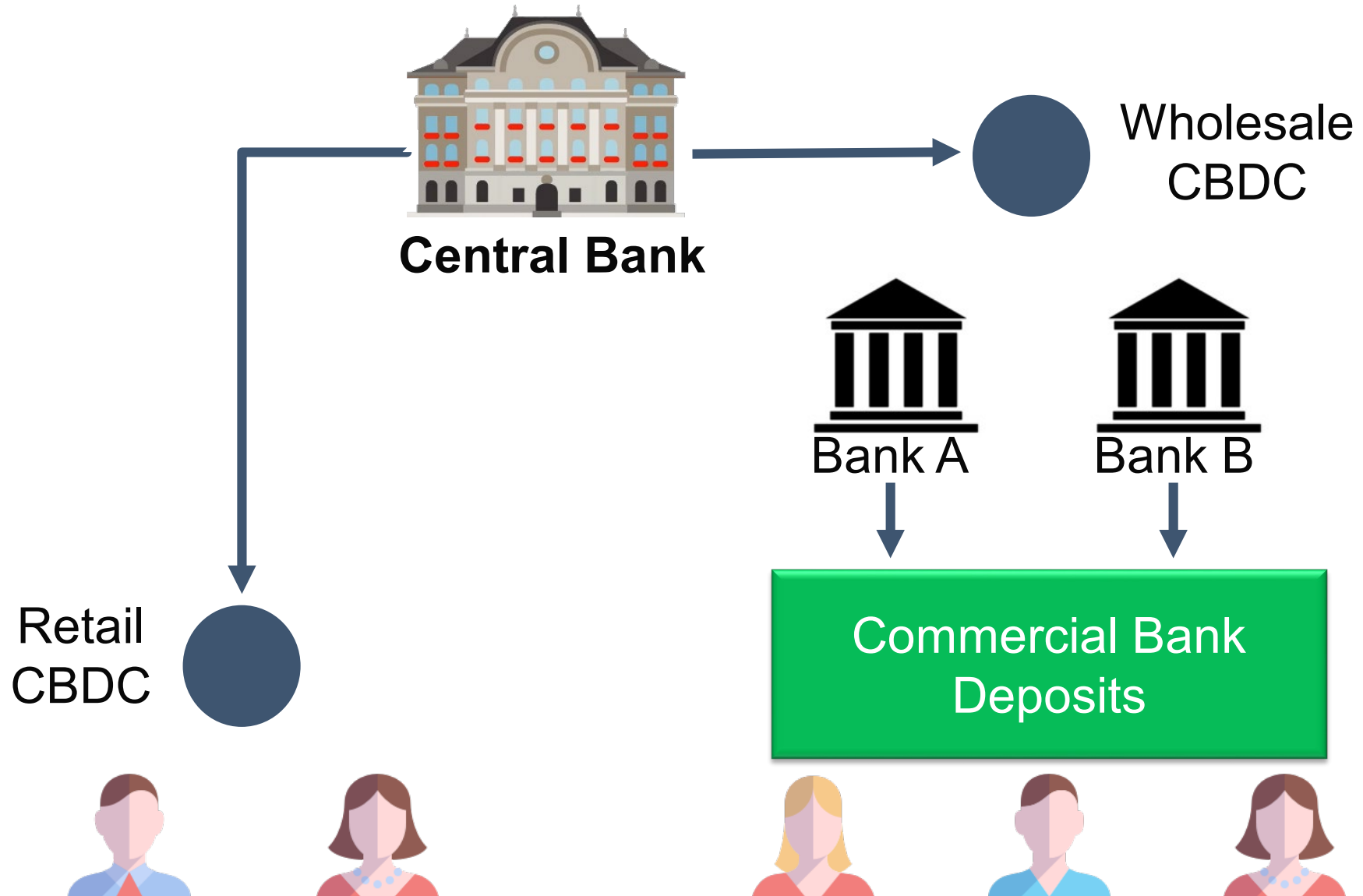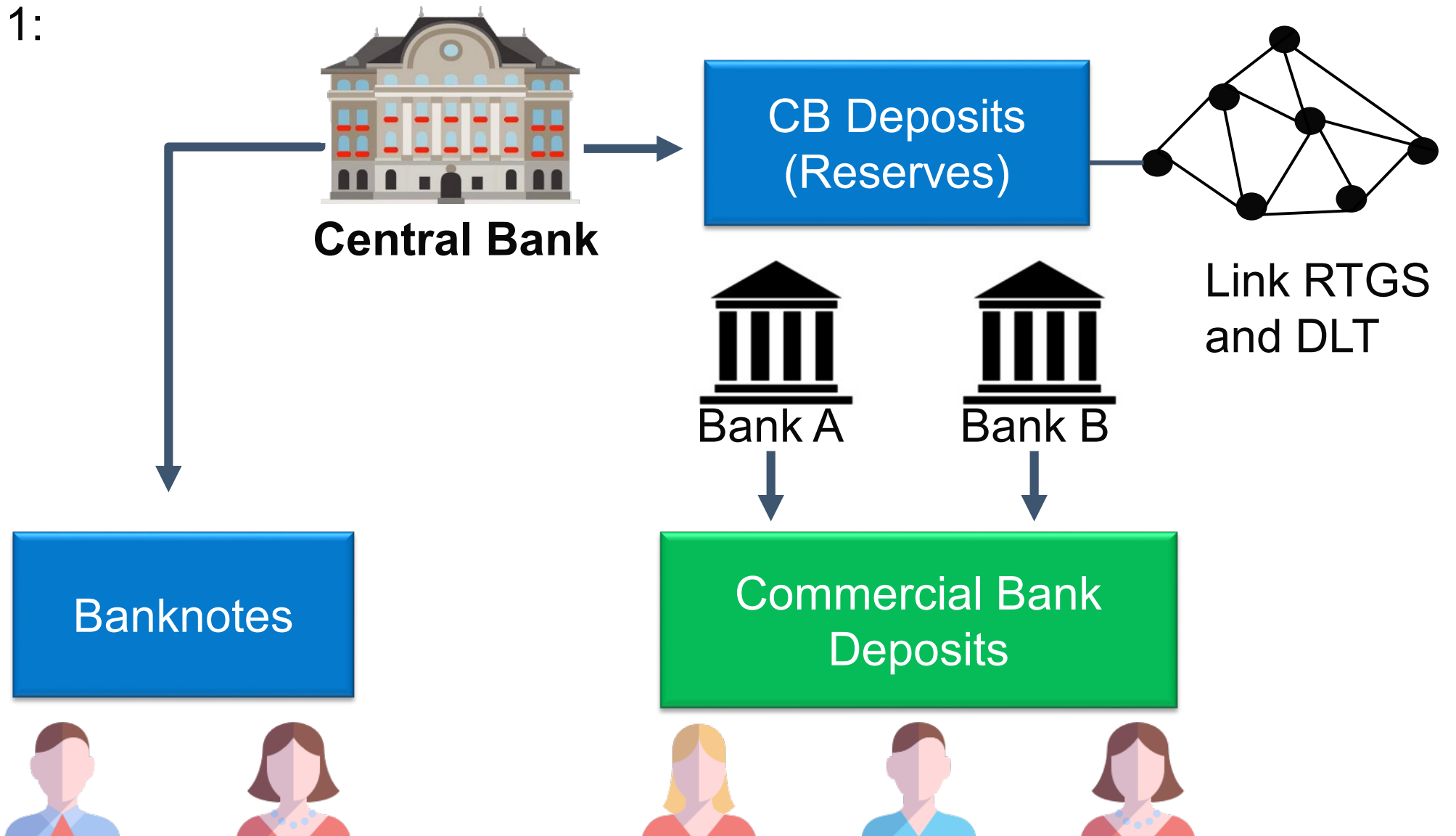
Alternative 2:
Private Stablecoins

Central Bank

CB Deposits (Reserves)

Bank A Bank B Stablecoin

Banknotes

Commercial Bank Deposits
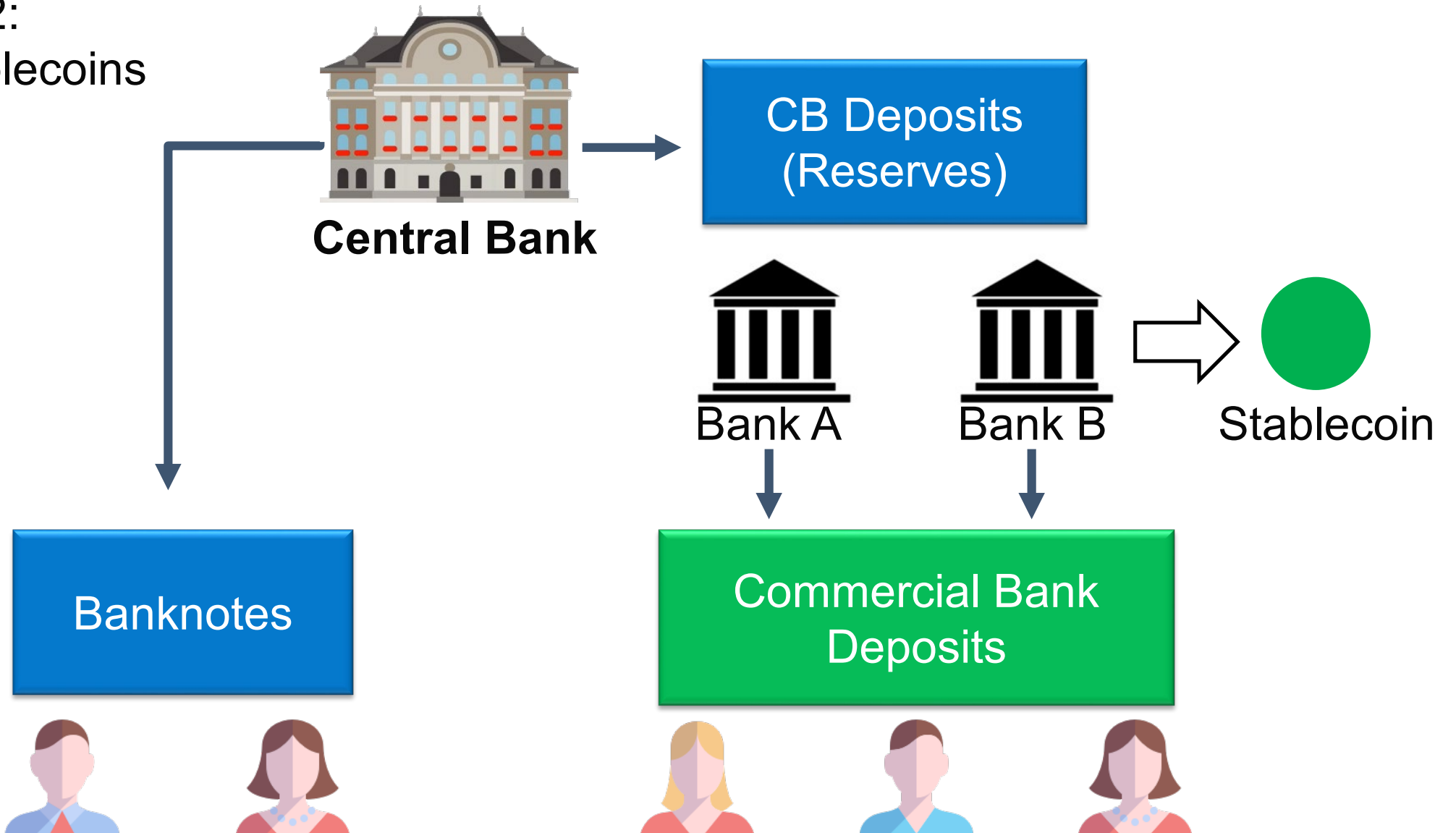
Alternative 3:
Instant Payments

Central Bank

CB Deposits (Reserves)

Bank A   Bank B

IP

Banknotes

Commercial Bank Deposits
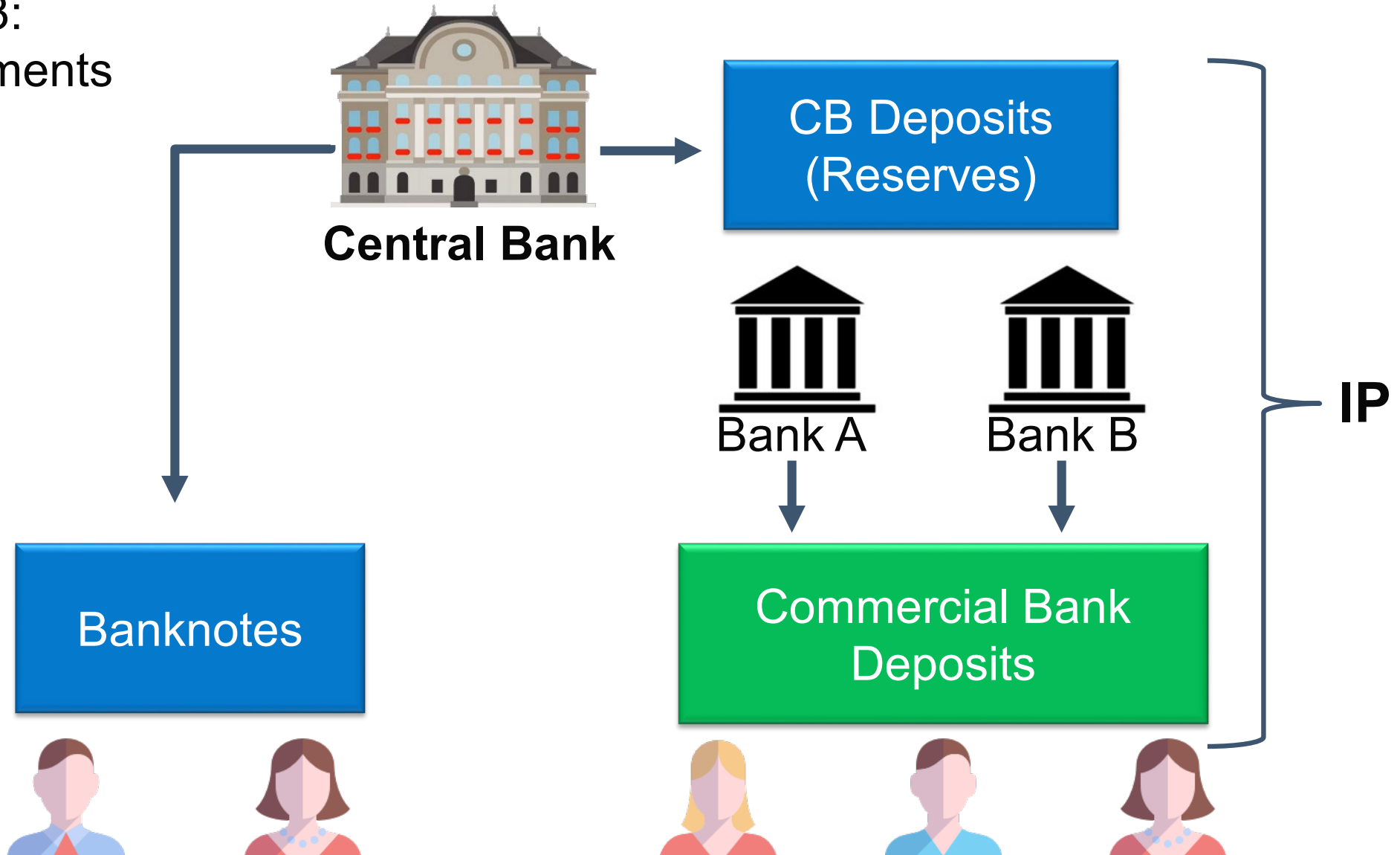
Different Ways to Issue a CBDC: (1) Architecture

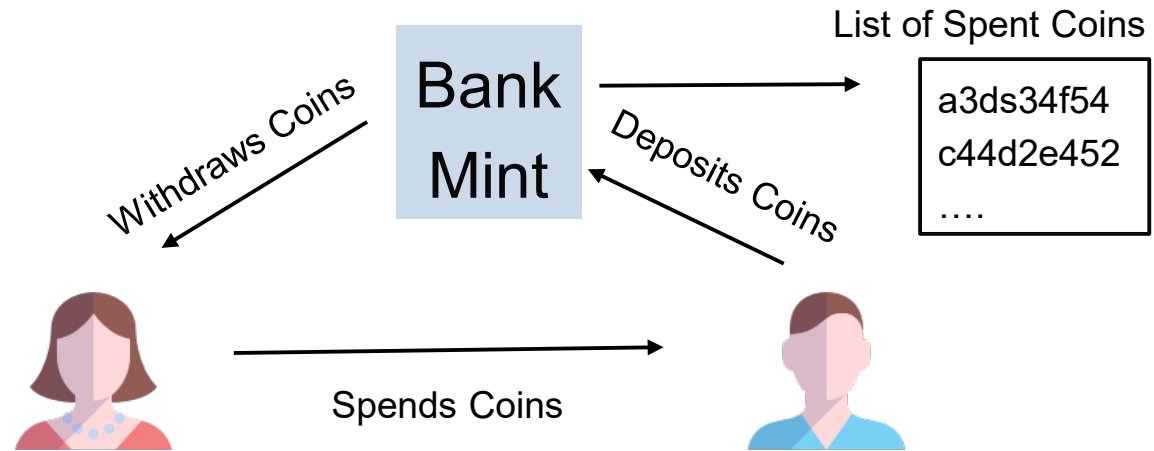**Centralized: eCash Architecture**

- Central Bank maintains only a list of spent coins (no payer data)
- Payee checks whether coin has been double-spent by depositing it.
- Easily scalable.

List of Spent Coins

a3ds34f54
c44d2e452
....

Bank Mint

Withdraws Coins

Deposits Coins

Spends Coins

Decentralized: DLT Architecture:

- CBDC issued as a token on DLT.
- Payer and Payee data available.
- Scalability more difficult.

SNB BNS
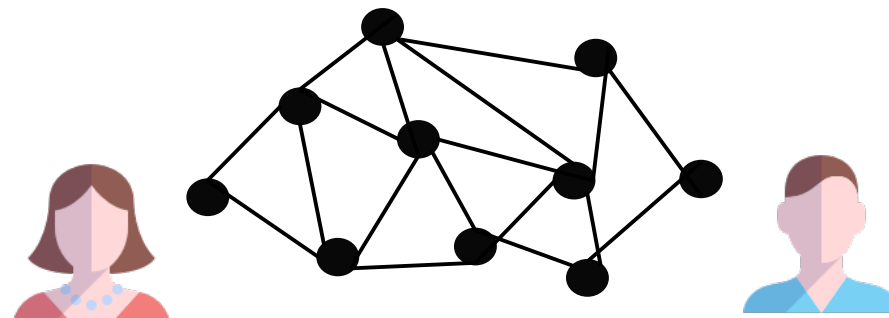
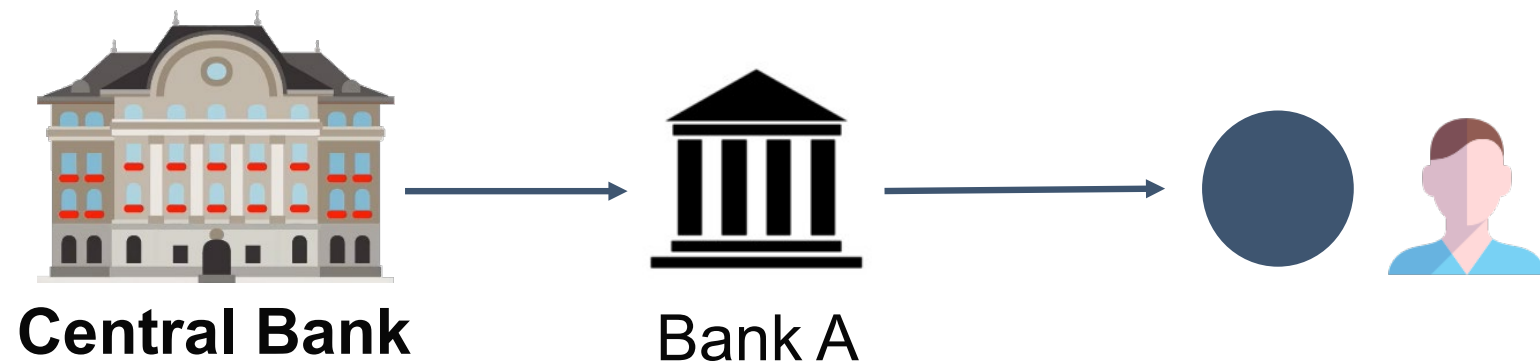# Different Ways to Issue a rCBDC: (2) One vs Two-Tier System

A. One-Tier

Central Bank

B. Two-Tier

Central Bank   Bank A

Retail CBDC Concerns

- Financial Stability concerns:
  - Competition with commercial bank deposits poses the risk of disintermediation of the commercial banking sector; banks could lose a cheap and stable source of funding.
  - During times of great uncertainty/volatility a CBDC could make banks more prone to runs, if it is easier to convert deposits into CBDC than into banknotes

- Concerns regarding mandate/role of central banks (the state): What is the role of central banks in retail payments? Isn't it the role of the private sector to provide services to end customers?

- Concerns regarding privacy: CBDC is potentially a perfect tool for mass surveillance. (For how to issue a privacy-preserving CBDC see SNB Working Paper 2021-03).

Thank you for your attention!

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