

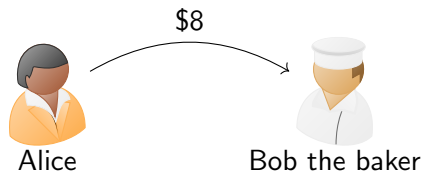
# Major roadblocks to CBDC adoption by the United States

Darrell Duffie  
Graduate School of Business  
Stanford University

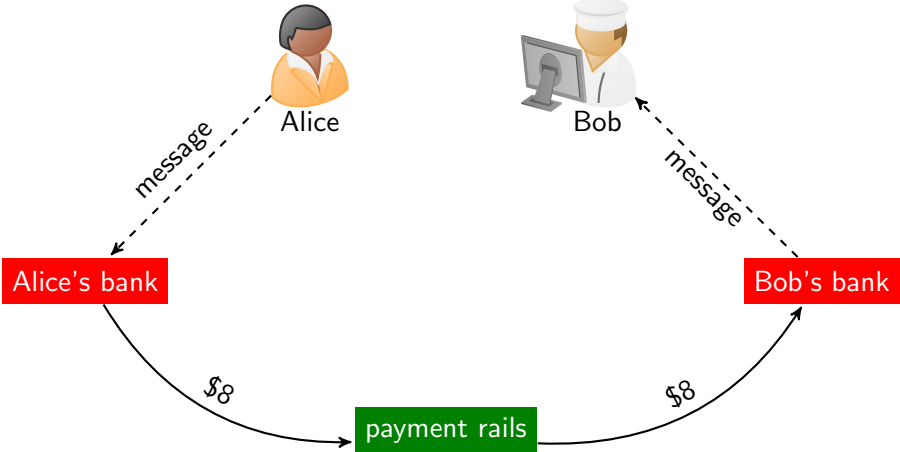
2024 International Conference on  
Economics, Technology, and Interdisciplinary Science

Shanghai Institute for Mathematical and Interdisciplinary Sciences  
Fudan University, November, 2024

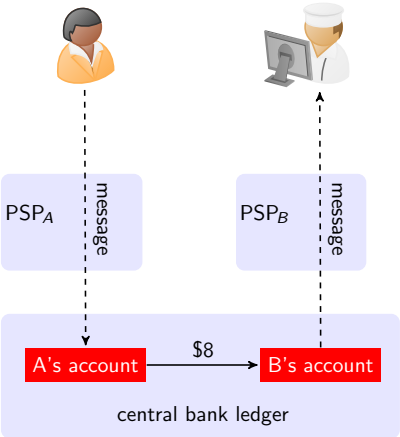
## A cash payment



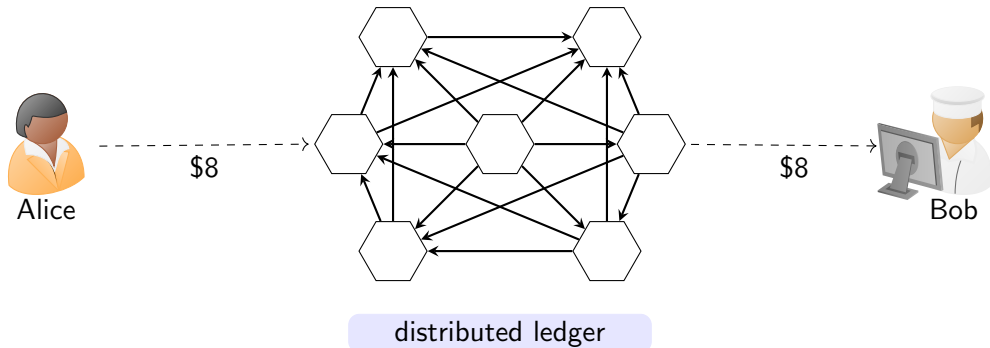
# A bank-railed payment



# A CBDC payment

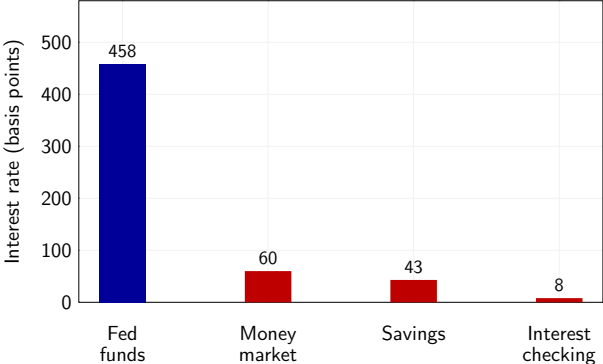


## A decentralized payment



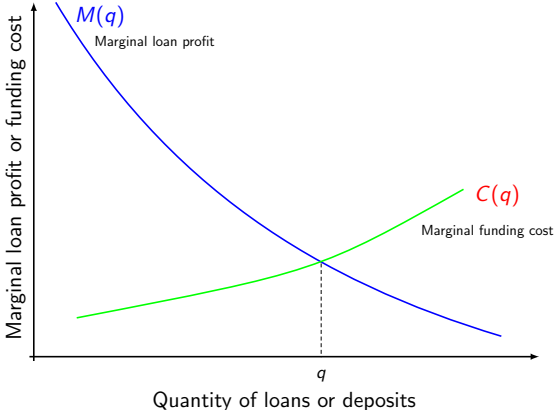
# Weak competition for deposits is a source of bank profit

Wholesale (blue) and retail (red) bank interest rates, November, 2024



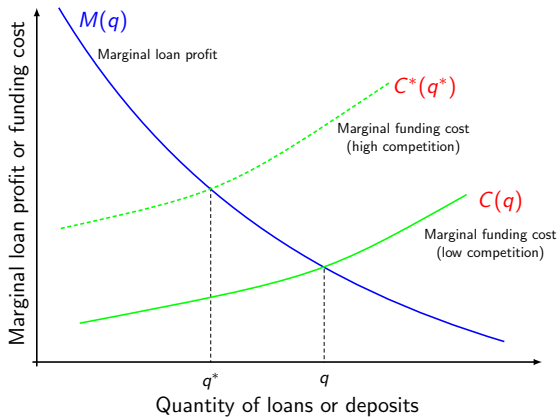
Data sources: Federal Reserve (FRED) and Federal Deposit Insurance Corporation.

# A monopolistic bank that funds all loans with deposits



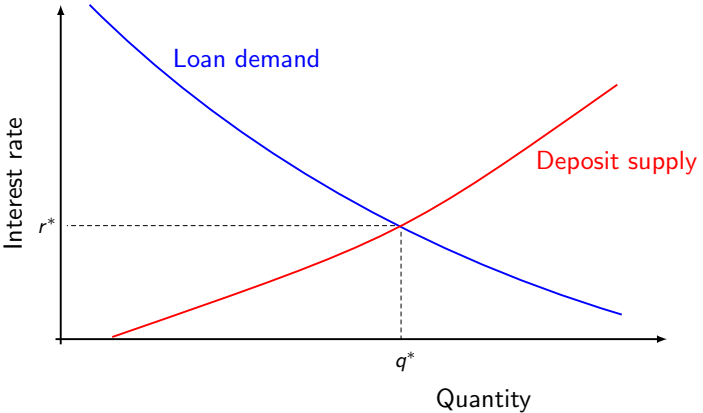
For small monopolistic banks:

Loan provision declines as deposit-market competition rises

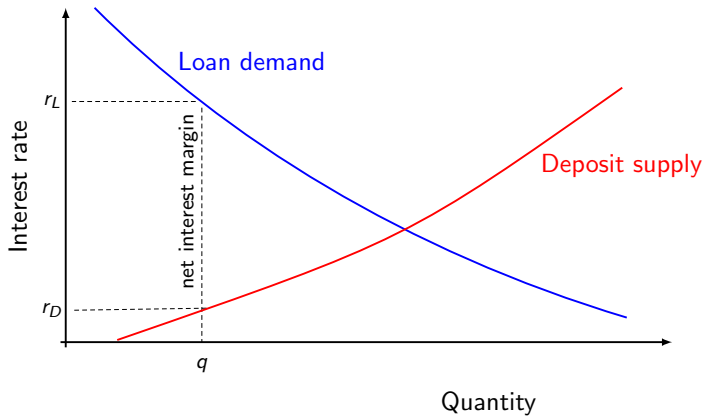




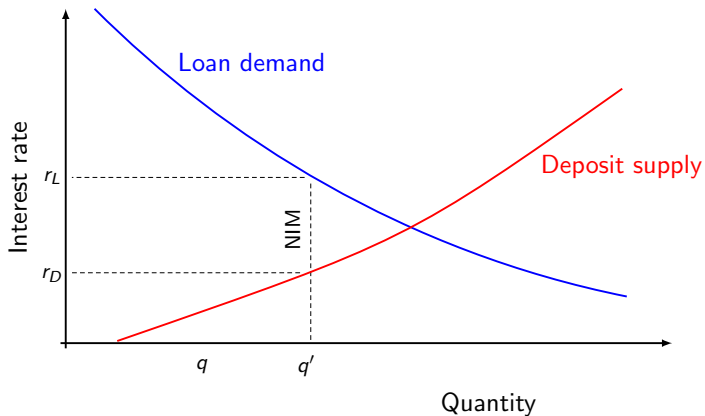
# Competitive loan and deposit market equilibrium



## Monopolistic loan and deposit market equilibrium



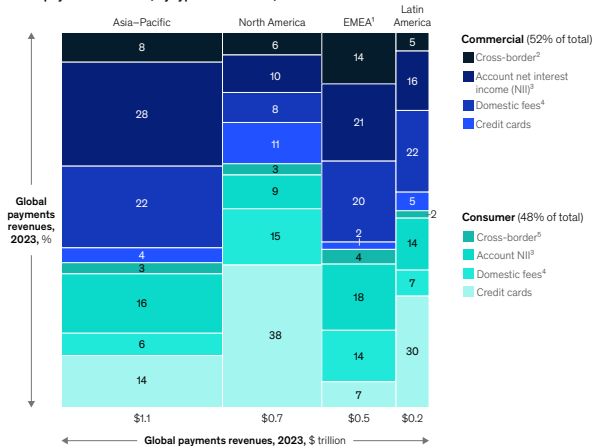
# CBDC competition for deposits might *increase* deposits and lending



# Disruptable bank-based payment system revenues

Ratio of payment revenues to GDP: North America 2.3% versus EMEA: 1.5%

Global payments revenue, by type and location, 2023



# Fast payment systems add speed and efficiency

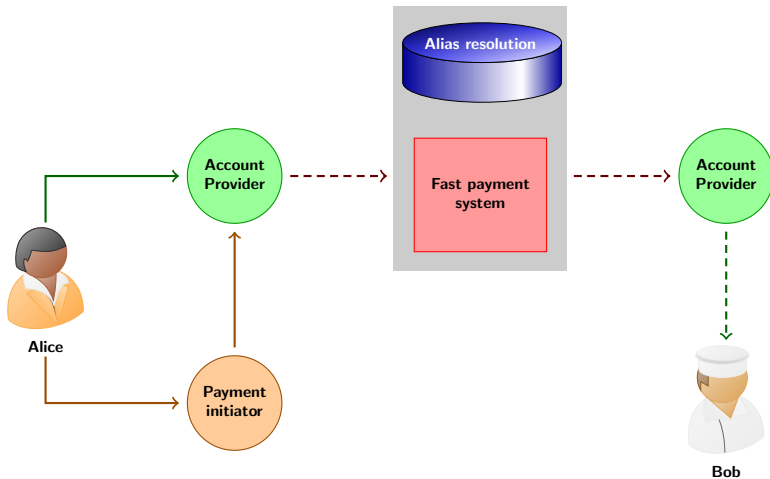
- ▶ Key defining properties:

1.  $24 \times 7 \times 365$  availability.
2. Real time gross settlement (RTGS).

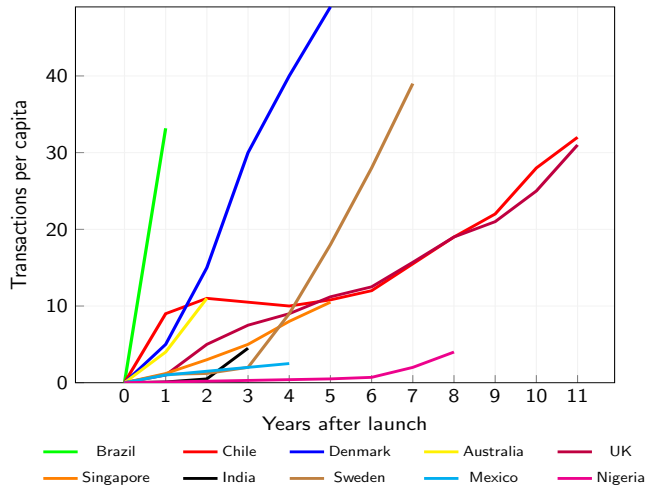
- ▶ Examples:

- ▶ Korean Electronic Banking System, established 2001.
- ▶ Bank of Mexico's Sistema de Pagos Electrónicos Interbancarios.
- ▶ Swish, a private mobile payment system available in Sweden.
- ▶ The United Kingdom's non-profit utility, [Faster Payments](#).
- ▶ Singapore: Fast and Secure Transfers (FAST).
- ▶ The European Central Bank [TARGET Instant Payment Settlement \(TIPS\)](#), based on the SEPA Instant Credit Transfer platform.
- ▶ The US: [Real-Time Payments System](#) and Fed RTGS fast payment system, FedNow.
- ▶ Brazil's Pix.

# A fast payment with alias resolution is much like a CBDC payment

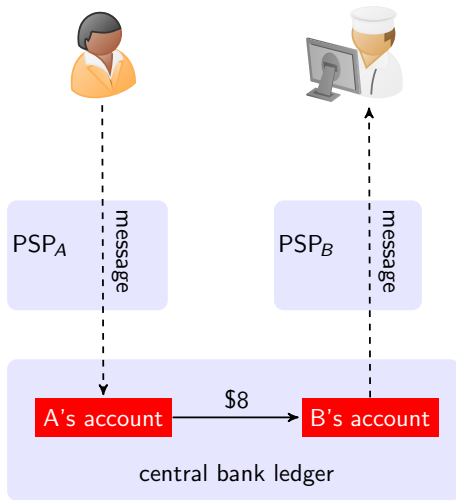


## Brazil's Pix adoption has been rapid



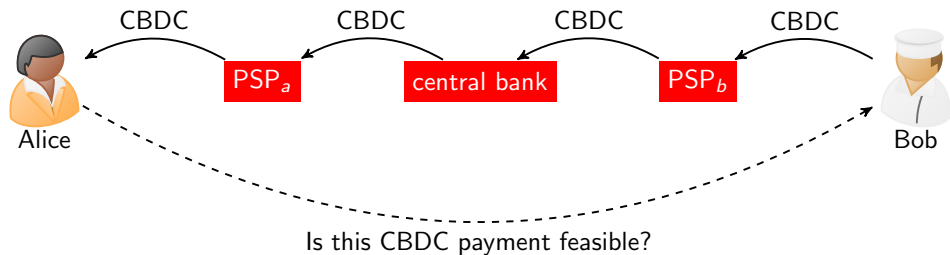
Source: Duarte, Jon Frost, Gambacorta, Koo Wilkens and Shin, Bank for International Settlements, 2022.

## CBDC design considerations





## Interoperability is crucial



## Case example: The design of a tentative digital pound

1. The Bank of England “mints” and transfers the digital pound on a core ledger, which could be a blockchain or a traditional centralized database.
2. User passthrough wallets are provided only by private-sector services.
3. Privacy would be like that for existing cards and bank accounts. The government and central bank get no personal data.
4. Accessible to UK and non-UK households and businesses, interoperably online and on smartphones and cards.
5. Offline viability depends on control of double-spend risk, and is to be determined.
6. No interest paid on CBDC balances.
7. A limited amount per user, such as 10,000 or 20,000 pounds, at least initially.
8. No programmability by the official sector.

## The Bank of Canada surveyed support by Canadians for a CBDC

- ▶ "... broad early adoption is unlikely given that available payment methods meet the needs of most users."
- ▶ "Financially vulnerable segments often have the most to gain from this new payment method but are most resistant to adoption."
- ▶ "Important considerations for appeal and adoption potential include universal merchant acceptance, low costs, easy access, simplified online payments, shared payment features, budgeting tools, and customizable security and privacy settings. Participants cited these features far more often than offline functionality and the ability to make anonymous payments."
- ▶ "Our results also show that cash remains an important method of payment and that certain groups may strongly resist a Digital Dollar if they conflate its launch with the end of cash issuance."
- ▶ "We find a hypothetical Digital Canadian Dollar requires the support of an information campaign to be understood, valued and adopted."

## Major hurdles for U.S. adoption of a digital dollar

Congress legislates  
a digital dollar

FedNow fails  
to become  
interoperable

Fed develops  
CBDC with  
popular features

Fed lowers card  
interchange caps

Big CBDC wallet  
sizes are allowed  
by the Fed

Deposit market  
innovation  
fails to unleash  
competition

## Politics, privacy, and the crypto industry

*“Heritage’s campaign illustrates the extent to which anti-CBDC skepticism is becoming ingrained on the right, fueled by fear that a revamped digital dollar would give the government new control over everyday life. Former President Donald Trump recently joined the movement, vowing to stop the Federal Reserve from launching a CBDC in the name of protecting Americans from ‘government tyranny.’*

*It also comes as the GOP increasingly embraces the crypto industry, which is helping stoke opposition against a government-run digital currency. The upshot is that it’s going to be very hard—and potentially impossible—for the U.S. to get to a place where Congress blesses the idea of the Fed launching a CBDC.”*

*Politico, March, 2024*