



FEDERAL RESERVE BANK *of* NEW YORK

Making Sense of Digital Currencies

WBS Gillmore Defi & Digital Currencies Policy Forum

Michael Lee and Antoine Martin
Federal Reserve Bank of New York

The views expressed herein are my own and may not reflect the views of the Federal Reserve Bank of New York or the Federal Reserve System

Key messages

- It is useful to separate “money” from “exchange mechanism”
 - Key innovation is the exchange mechanism: DLT/blockchain
 - Clarifies the difference between, for example, stablecoins and Alipay/Tenpay
- Separating “money” from “exchange mechanism” suggests new questions if DLTs turn out to be the better exchange mechanism:
 - What is the best money for DLTs? Is “commodity money” the best we can do?
 - Who should issue money for DLTs? Is there a new role for central banks?

Digital currency and payment eco-system

A sketch of today's payment landscape

A variety of payment options are currently available to the public

Cash

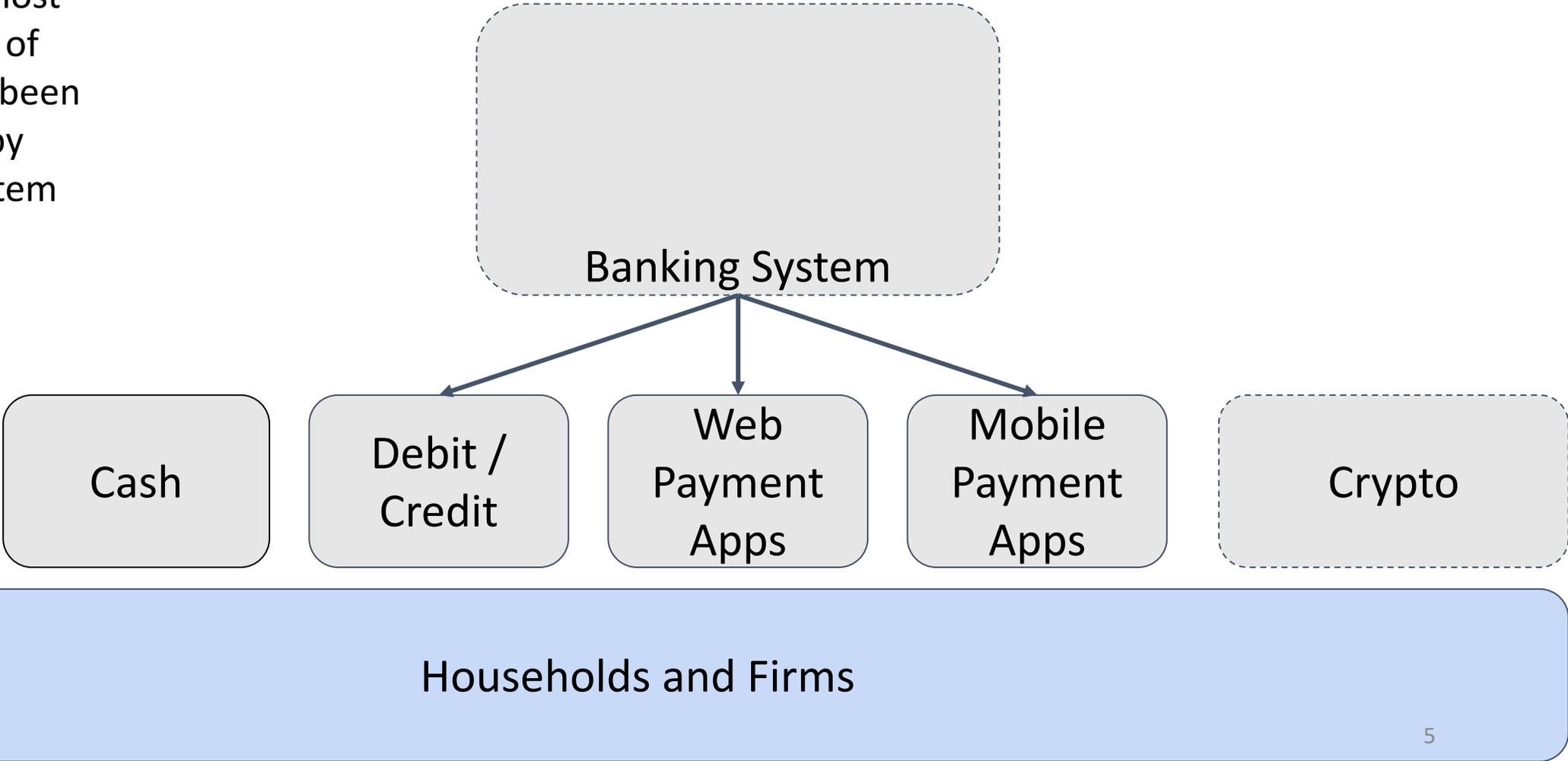
Debit /
Credit

Web
Payment
Apps

Mobile
Payment
Apps

Households and Firms

Until recently, most digital methods of payments have been intermediated by the banking system



Central Bank

Central banks play a role in supporting payments both directly and indirectly

Banking System

Cash

Debit /
Credit

Web
Payment
Apps

Mobile
Payment
Apps

Crypto

Households and Firms

Central Bank

Directly, CB typically supports issuance and distribution of physical cash for public use

Banking System

Cash

Debit /
Credit

Web
Payment
Apps

Mobile
Payment
Apps

Crypto

Households and Firms

Central Bank

Indirectly, CB issues bank reserves to support banks in facilitating various payment methods

Bank Reserves

Banking System

Cash

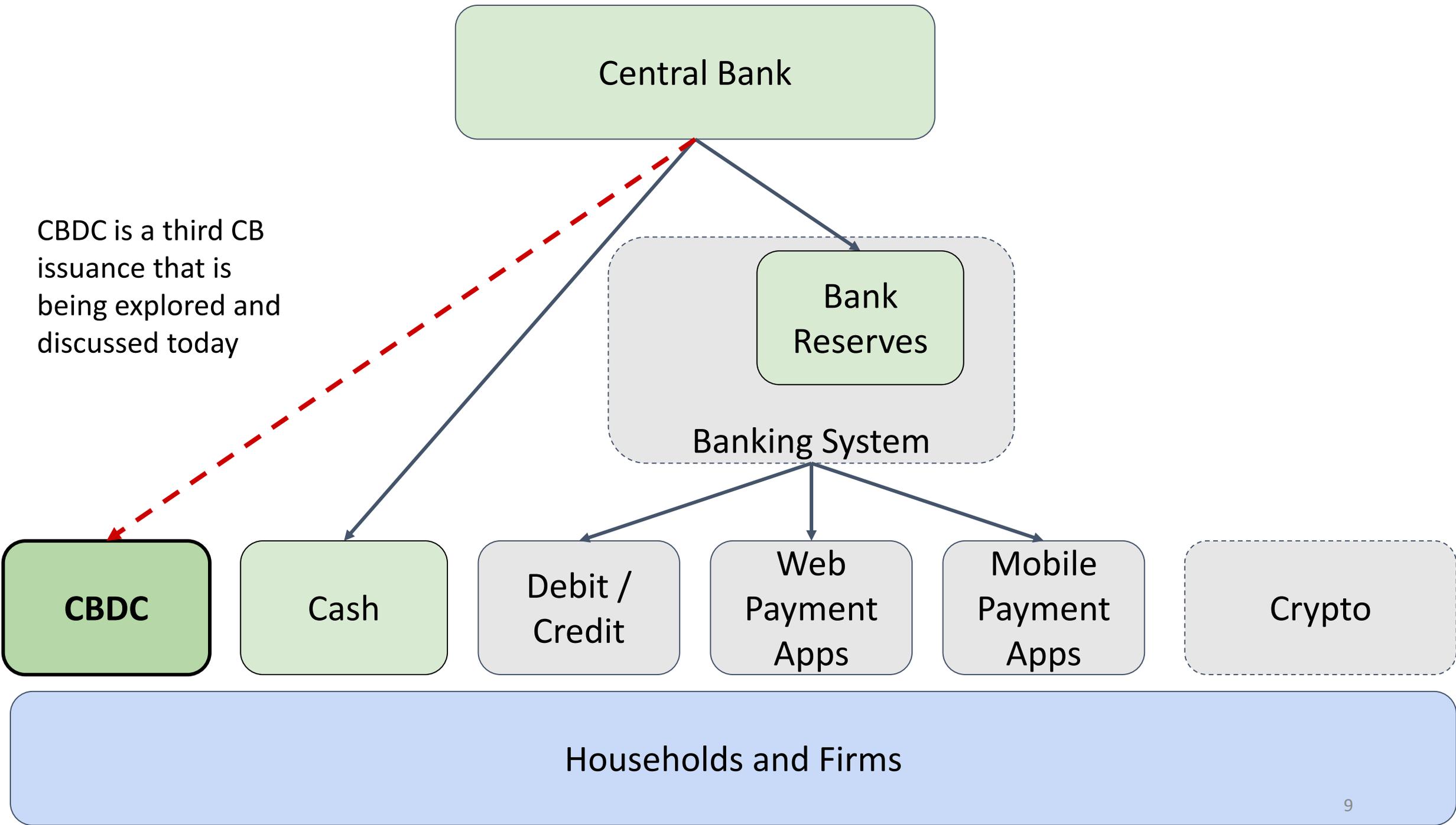
Debit / Credit

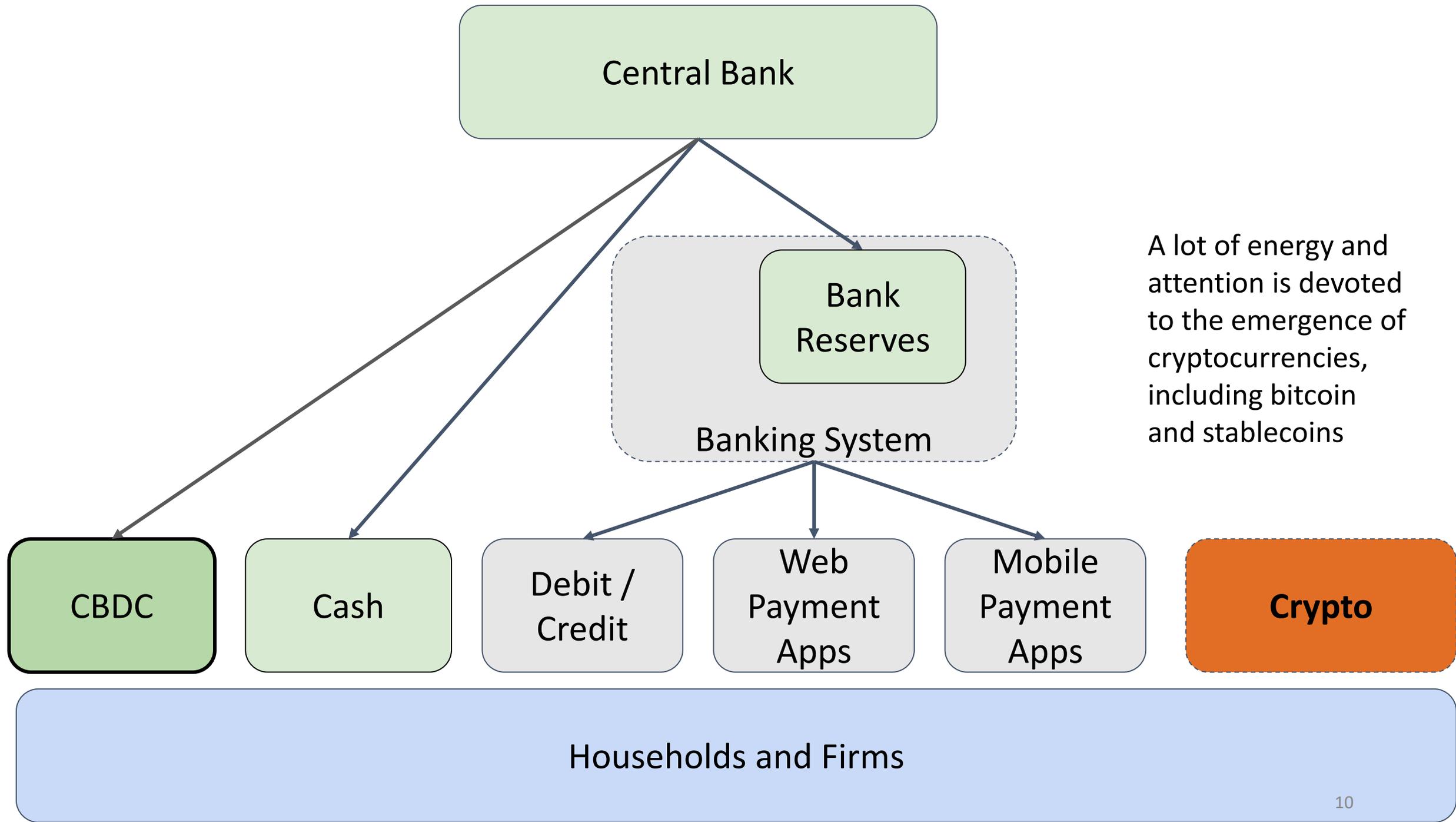
Web Payment Apps

Mobile Payment Apps

Crypto

Households and Firms





What is new with digital currencies?

- Cryptocurrencies represent a radical innovation in the payment landscape
- But how do they fit in that landscape?
- It is useful to characterize payment mechanisms by two dimensions:
 - Type of money (being exchanged) – related to store of value
 - Type of exchange mechanism – related to medium of exchange

“Money” vs. “exchange mechanism”

“Money” is related to what makes an asset a store of value

“Exchange mechanism” is related to what makes an asset a medium of exchange

Exchange mechanism	Money	Unbacked Money	Money backed by assets	Money backed by unsecured claims
Physical transfer		Currency, Rai stone	Gold coins	Endorsed check
Electronic with trusted Third party		Central Bank deposits, CBDCs (E-CNY, Sand dollar)	AliPay/TenPay , Fnality balances	Uninsured commercial bank deposit, Tokenized deposits (JPM Coin)
Electronic without third party (permissionless DLT)		Bitcoin	Stablecoins	Some ICOs

Why does it matter?

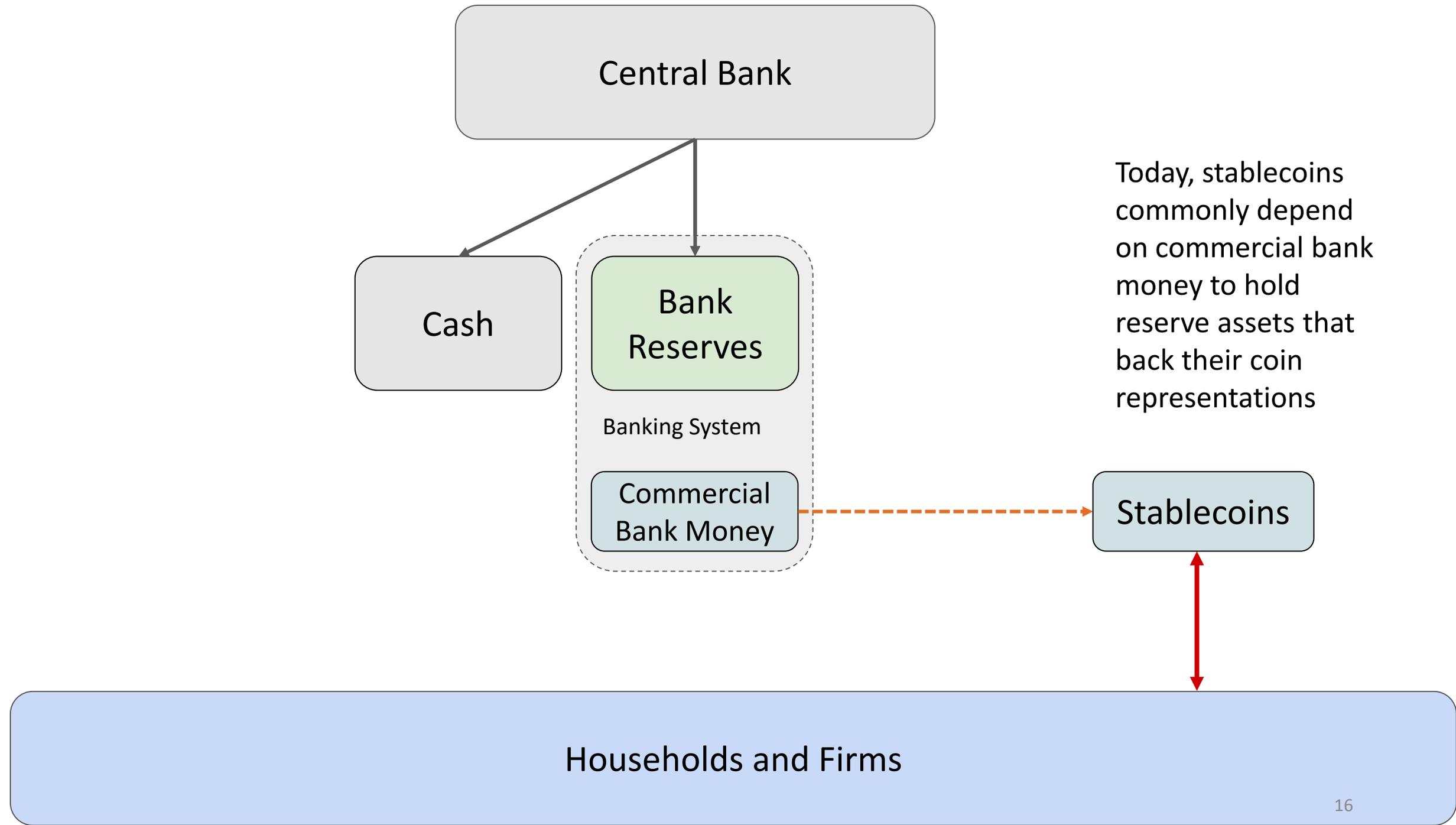
- Thinking about money vs exchange mechanism shows that Bitcoin is not a new type of money—but the exchange mechanism is new
- The distinction between stablecoins and Alipay/Tenpay is in the transfer mechanism, not the type of money
- This framing suggests that we should ask different questions about stablecoins and CBDC

What is novel about Bitcoin?

- Bitcoin is not backed by anything nor a claim on anyone
 - Price is entirely determined by supply and demand, so very volatile
- Bitcoins can be transferred without a trusted third party
 - Requires a distributed ledger
 - And a “consensus mechanism” (proof of work)
- Transfer of value without trusted third party is radically new but how useful is it?
 - Today, Bitcoin is not used for payments except in very specific cases

Stablecoins

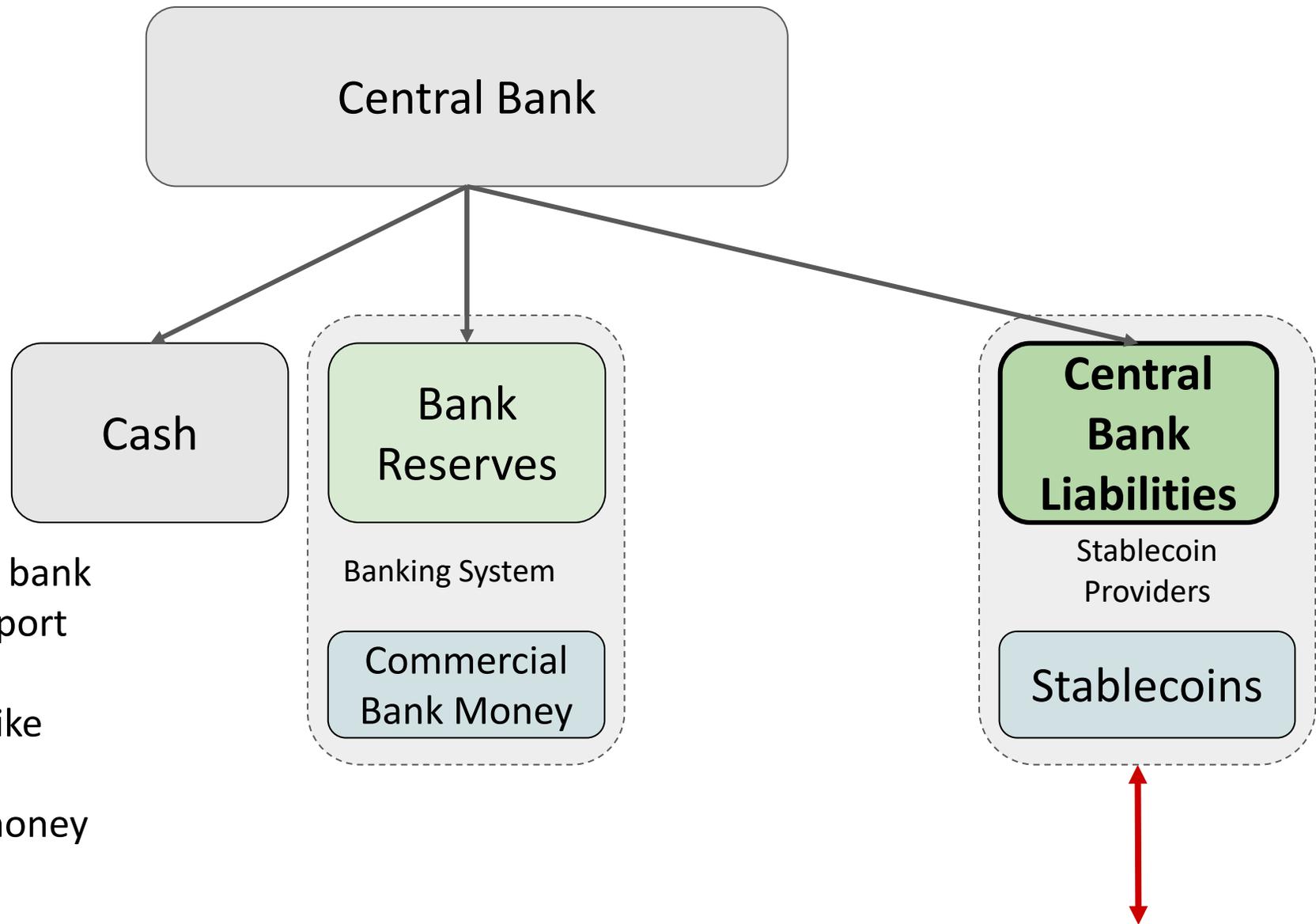
- “Fiat-backed” stablecoins emerged as a solution to the price volatility of cryptocurrencies
- Stabilize their value with assets (in practice almost always USD assets)
 - This requires a trusted third party
- Use the same type of transfer technology as Bitcoin, which does not require a trusted third party
- Stablecoins are much better payment instruments than Bitcoin



Stablecoin's close cousins: AliPay and TenPay

Stablecoins are typically defined as cryptocurrencies but, functionally, two key features matter:

1. Maintain **stable value** relative to currency
 2. Usable as **means of payment**
- This definition is agnostic about the “exchange mechanism”
 - Today, for every yuan in customer deposits, Alipay/Tenpay, must hold a yuan in an account at the People's Bank of China, making them functionally equivalent to stablecoins



In principle, central bank liabilities could support the provision of stablecoins, much like bank reserves for commercial bank money

Households and Firms

What is novel about stablecoins?

- Backing money with assets to stabilize its value is not new
 - Historically, private money backed by assets did not work well
- If DLTs turn out to be the best exchange mechanism, then we should ask: What is the best money for DLTs?
- Commodity money does not seem to be the best money for legacy technology, is there a reason why it would be for DLTs?
 - We could think of other options, like “tokenized bank deposits”

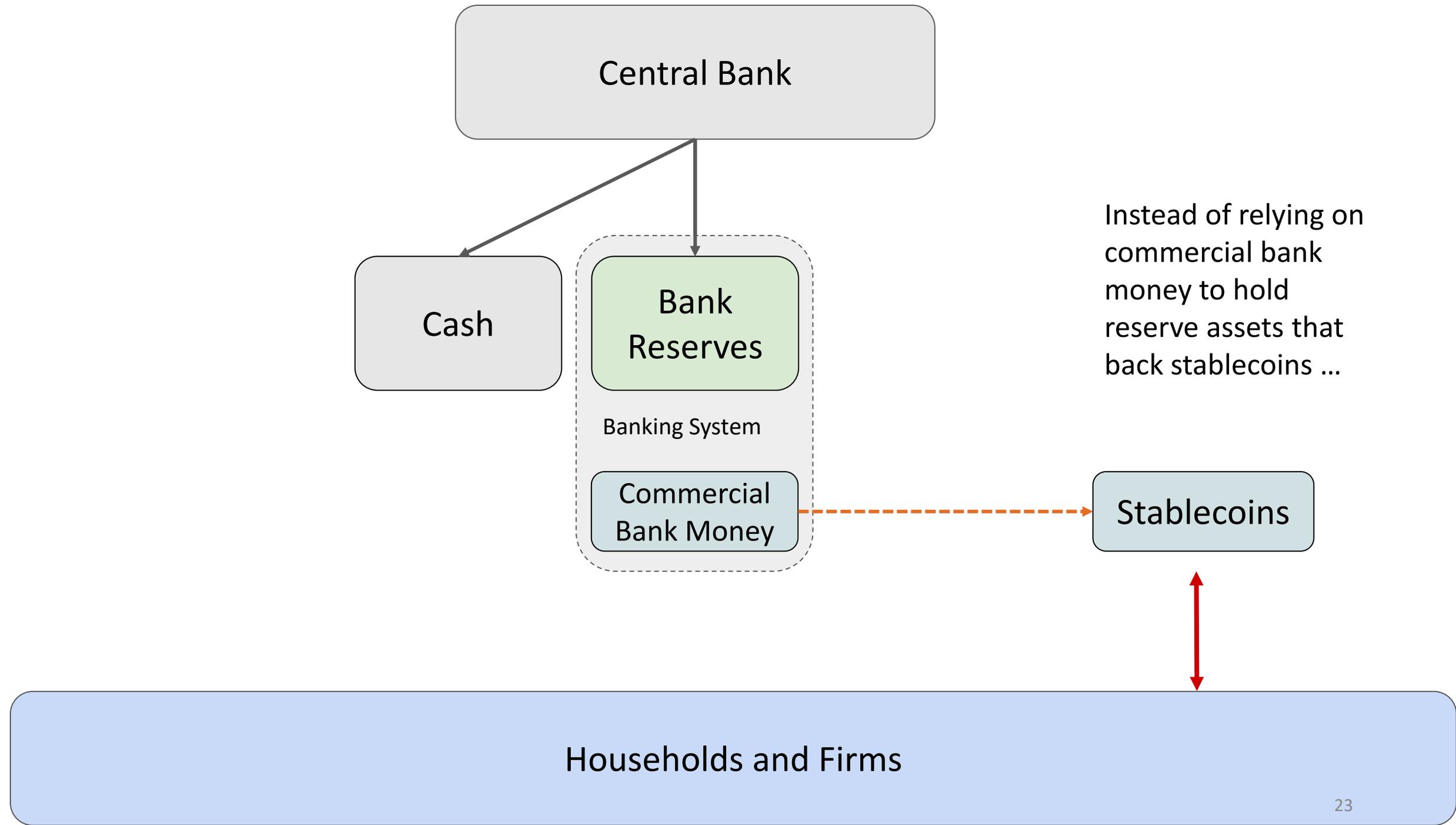
Central banks and digital currencies

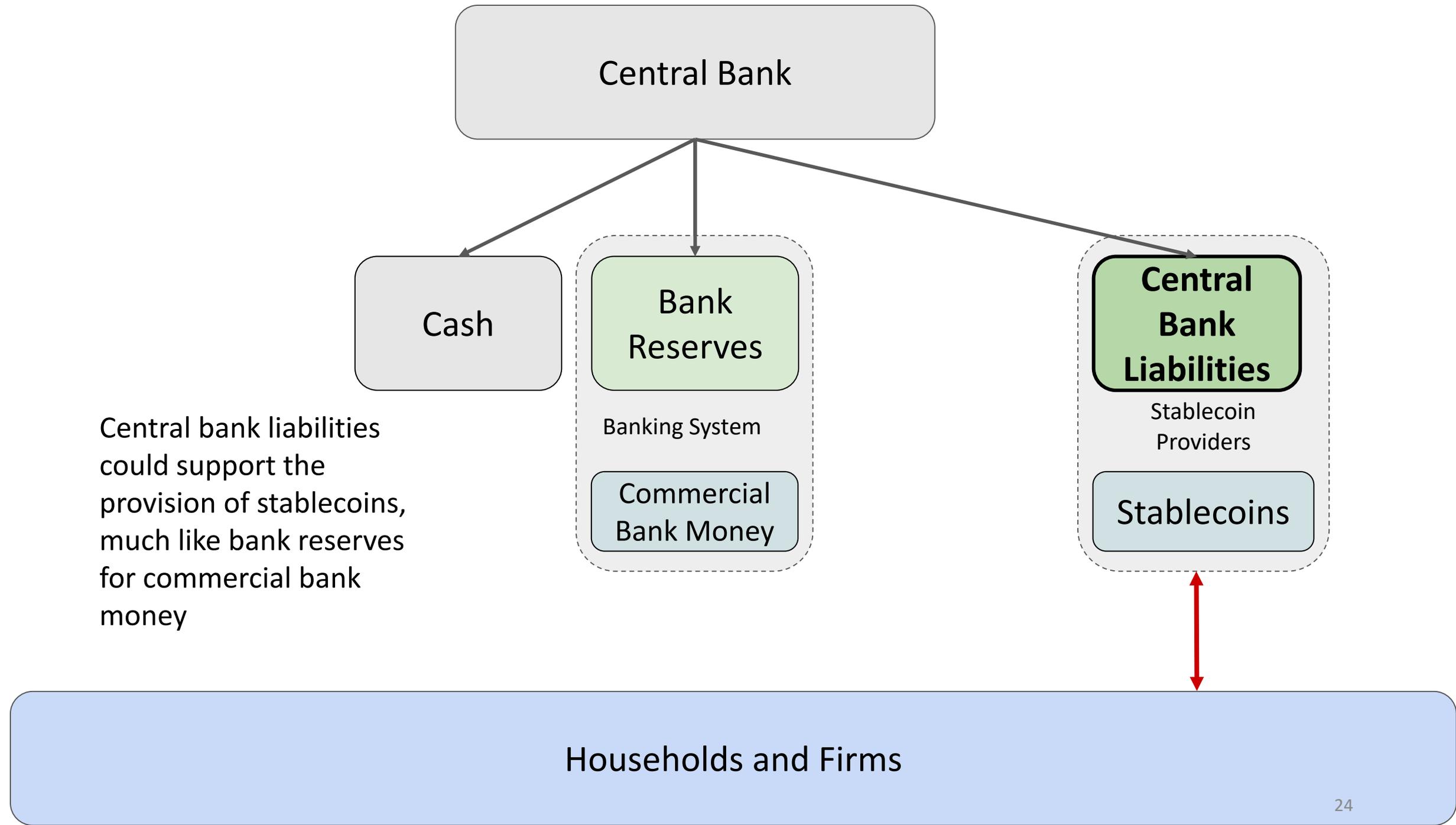
How could a CB support digital currencies?

- Highlight two “representative” options that vary in terms of implementation
- **Indirect** provision: Support stablecoins that are a close substitutes for CB money
- **Direct** provision: issue a retail CBDC

Option 1. Central bank supports stablecoins

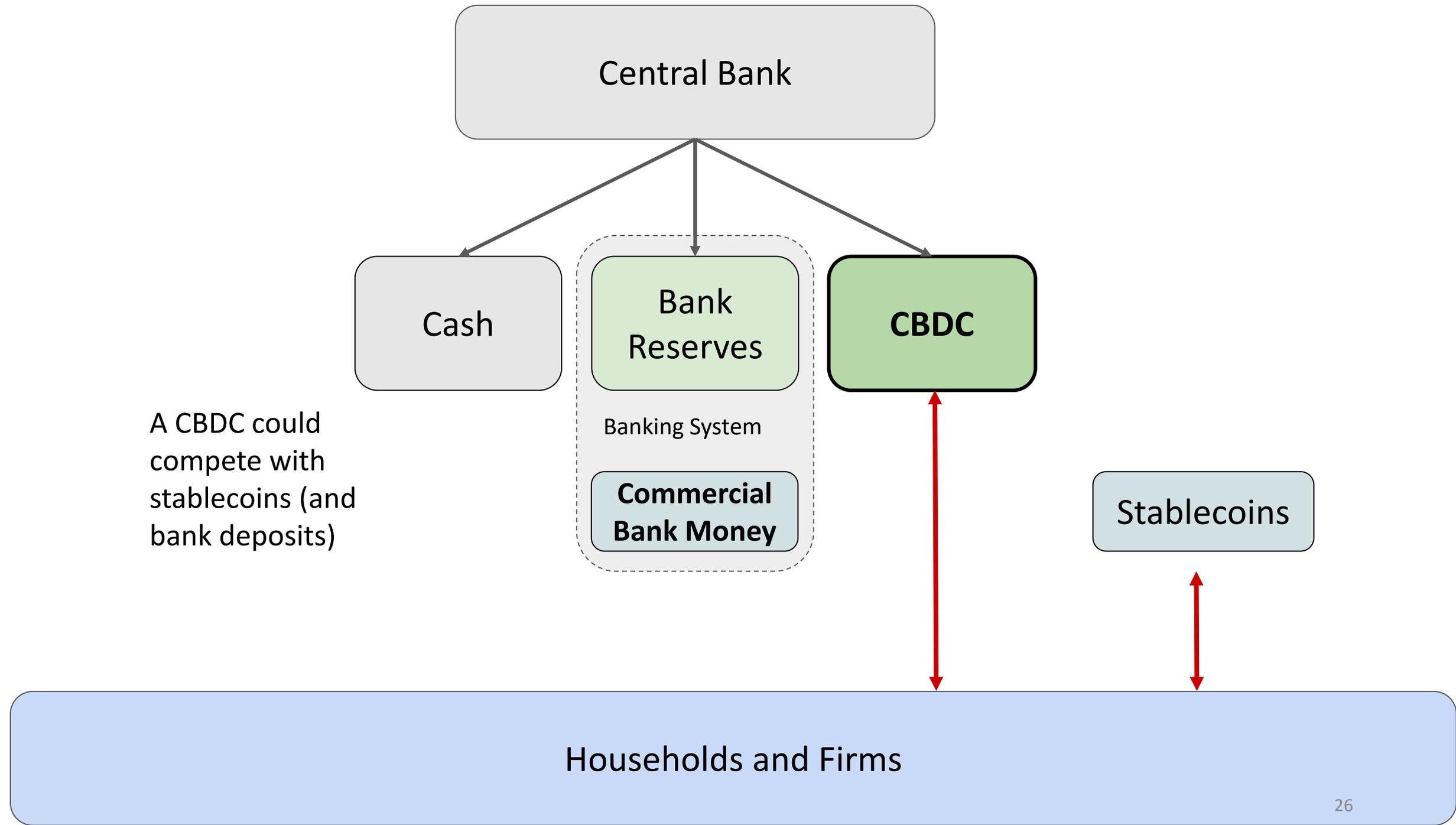
- A central bank could support stablecoins by:
 - Allowing them to be backed one-for-one with balances in a CB account
 - Facilitating a bankruptcy remote legal structure to ensure that end-users are paid in full even if issuer becomes bankrupt
- Such stablecoins could be close substitute for CB money
 - Balances in a CB account are risk free and could earn interest
- Stablecoin issuers should be subject to some oversight in exchange for account access





Option 2. Central bank issues CBDC

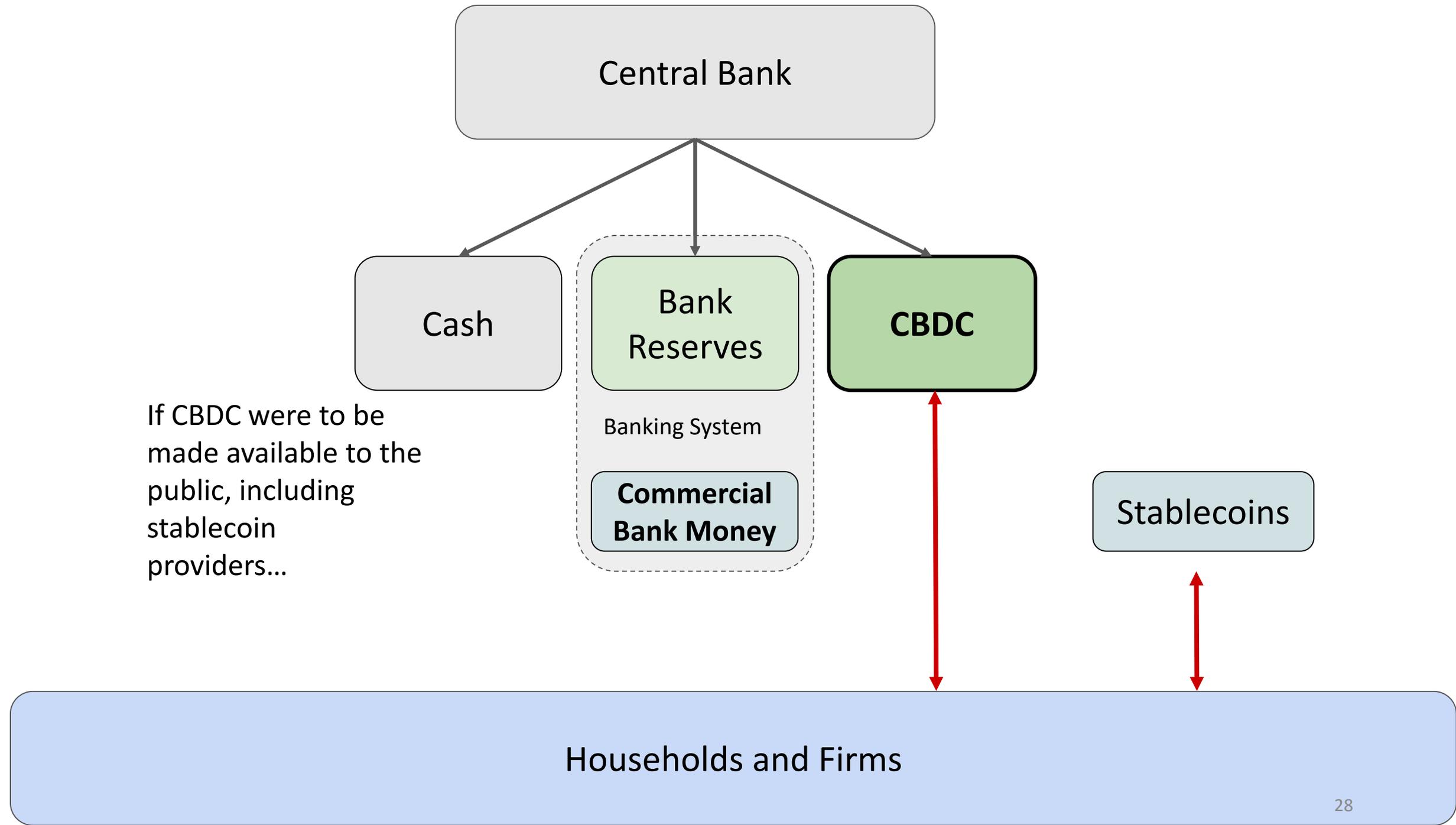
- A central bank could issue its own digital currency, a CBDC
- This could make it easier for the CB to pursue some Public policy objectives such as:
 - Financial inclusion
 - Facilitating direct payments from government in times of crisis
 - Heightened privacy protection

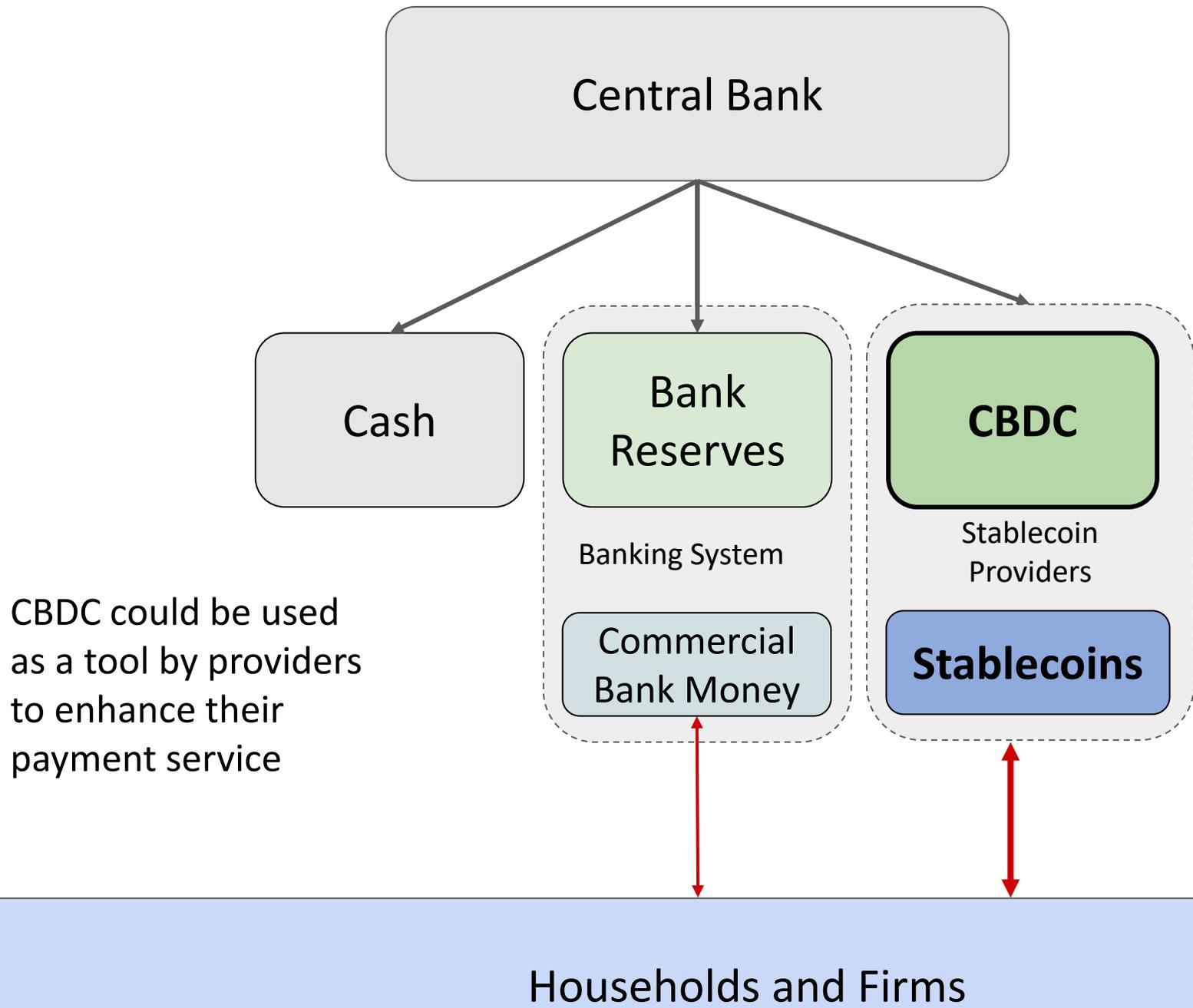


A CBDC could compete with stablecoins (and bank deposits)

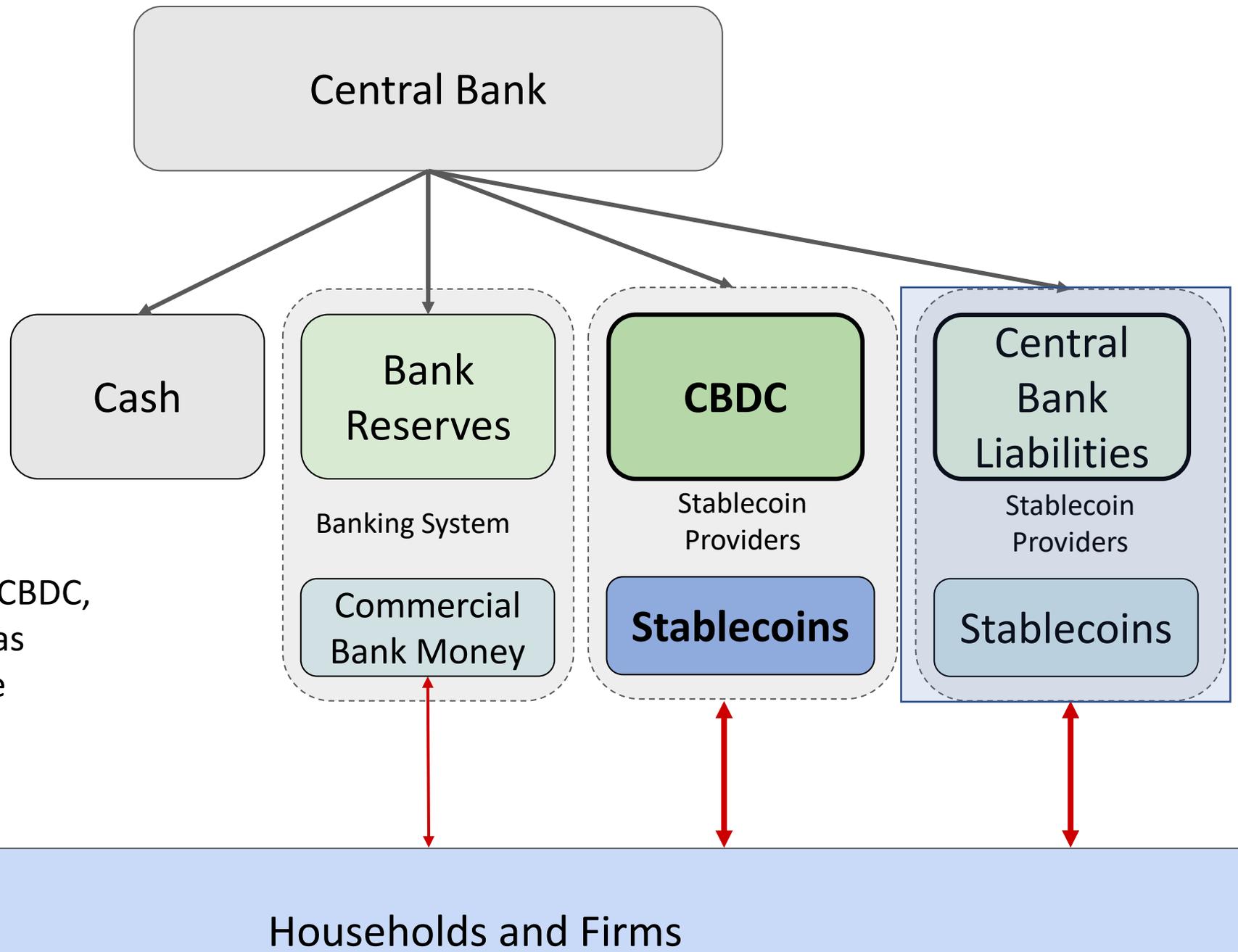
What would be the private sector reaction?

- Depending on its design, opens up the possibility to use the CBDC to back a stablecoin instead of government securities or bank deposits
- Why would a private entity want to back a stablecoin with a CBDC?
 - Such stablecoins would be safer to end-users and thus more attractive than those backed with other assets
- Why attempt to compete with the CBDC?
 - Private companies may believe that they can build a more convenient and innovative form of money





CBDC could be used as a tool by providers to enhance their payment service



Even with the introduction of CBDC, a similar result as option 1 may be realized

What is the point of creating a CBDC?

- If a CBDC mainly supports the creation of stablecoins backed by CB liabilities, then the marginal benefit of creating a CBDC compared to using existing liabilities (e.g. balances in CB account) seem small
- Adapting our regulatory and legislative environment to support stablecoins is already a formidable task, but it is probably easier than managing a CBDC for retail use
- The private sector currently provides all retail digital means of payments on legacy technology, why should that change for DLTs?

To sum up

- Separating “money” from “exchange mechanism” is useful to understand recent developments in digital currencies
- It clarifies what is new about cryptocurrencies and what is different between, for example, stablecoins and Alipay/Tenpay
- It suggests new questions if DLTs turn out to be the better exchange mechanism:
 - What is the best money for DLTs? Is “commodity money” the best we can do?
 - Who should issue money for DLTs? Is there a new role for central banks?

References

- More on Cryptocurrencies
 - [Hey, Economist! What Do Cryptocurrencies Have to Do with Trust?](#) (Liberty Street Economics, 2018)
 - [Deciphering Americans' Views on Cryptocurrencies](#) (Liberty Street Economics, 2019)
- More on Money vs. Exchange Mechanism
 - [Bitcoin Is Not a New Type of Money](#) (Liberty Street Economics, 2020)
- More on Public vs. Private Provision of Payments
 - [Central Banks and Digital Currencies](#) (Liberty Street Economics, 2021)
- More on Stablecoins and CBDC
 - [Why Central Bank Digital Currencies?](#) (Liberty Street Economics, 2021)
 - [The Future of Payments Is Not Stablecoins](#) (Liberty Street Economics, 2022)