

CBDCs: Money Reimagined – Quiz

Module 6: The Infrastructure Problem

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Digital Finance — BSc Course

Question 1

Money must fulfill three functions to qualify as “money.” Which of the following is **NOT** one of them?

- A Unit of account (prices denominated in a currency)
- B Medium of exchange (used to pay for goods and services)
- C Source of investment returns (money should grow in value)
- D Store of value (savings retain purchasing power over time)

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Answer: (C) The three functions are unit of account, medium of exchange, and store of value. Money is not required to generate investment returns — that is the function of assets. Most cryptocurrencies fail the “store of value” test due to extreme volatility.

Question 2

The BIS Money Flower taxonomy classifies forms of money along four dimensions. A CBDC sits at the intersection of all four. Which four dimensions does it combine?

- A Fast, cheap, anonymous, decentralized
- B Central bank issued, digital, widely accessible, token-based
- C Private, analog, restricted, account-based
- D Government-backed, physical, limited-access, hybrid

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Answer: (B) The Bech & Garratt (2017) BIS Money Flower maps money forms across four circles: issuer (central bank vs. private), form (digital vs. physical), access (wide vs. restricted), and technology (token vs. account). A CBDC uniquely occupies the intersection of all four — no existing form of money does this.

Question 3

What is the difference between a retail CBDC and a wholesale CBDC?

- A Retail CBDCs use blockchain; wholesale CBDCs use traditional databases
- B Retail CBDCs are for the general public (day-to-day payments); wholesale CBDCs are for banks and financial institutions (interbank settlement and securities)
- C Retail CBDCs are cheaper; wholesale CBDCs are more expensive
- D There is no difference — the terms are interchangeable

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Answer: (B) Retail CBDCs serve millions of users for everyday payments (examples: e-CNY, Digital Euro). Wholesale CBDCs serve hundreds of institutional participants for large-value interbank settlement (examples: Project Helvetia, mBridge). Switzerland's SNB focuses on wholesale, leaving retail payments to the private sector.

Question 4

Nearly every CBDC project has chosen a two-tier architecture over a one-tier architecture. What is the key reason?

- A Two-tier is technically simpler to build
- B In a two-tier system, the central bank issues the CBDC but commercial banks distribute it to users, preserving the banking sector's role while avoiding the operational burden of the central bank handling KYC, tech support, and fraud for millions of users
- C Two-tier means the CBDC exists on two separate blockchains
- D One-tier systems are illegal under international law

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- Ⓓ One-tier systems are illegal under international law

Answer: (B) One-tier means the central bank serves the public directly — handling identity verification, customer support, and fraud management for potentially hundreds of millions of users. Two-tier preserves commercial banks as intermediaries (they handle these functions), while the central bank focuses on issuance and monetary policy.

Question 5

The lecture distinguishes between account-based and token-based CBDCs. Which statement correctly describes a **token-based** CBDC?

- A It requires identity verification for every transaction
- B It functions like digital cash — a bearer instrument where whoever holds the token owns it, enabling anonymous small transactions and offline use
- C It is always linked to a bank account
- D It cannot be used for payments

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Answer: (B) A token-based CBDC is a bearer instrument: possession equals ownership, just like a banknote. No identity verification is needed for transfer. This enables privacy for small transactions and offline use, but carries risk of loss or theft. Most designs use a hybrid: token-based for small amounts, account-based for large ones.

Question 6

The e-CNY (China's CBDC) is the world's largest CBDC pilot. What is its primary motivation?

- A To replace all physical cash in China immediately
- B To counter the Alipay/WeChat duopoly (which controls 90%+ of mobile payments), maintain monetary sovereignty, and potentially enable cross-border use via mBridge
- C To introduce Bitcoin as legal tender
- D To eliminate all commercial banks in China

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Answer: (B) The e-CNY aims to ensure the central bank (PBOC) retains a direct link to the payments system, which private platforms (Alipay, WeChat Pay) had effectively captured. With 260M+ wallets and 26 pilot cities, it is the largest CBDC experiment — though adoption remains low relative to existing payment platforms.

Question 7

The ECB's proposed Digital Euro includes a holding limit of EUR 3,000 per person. Why?

- A Because the technology cannot handle larger amounts
- B To prevent bank disintermediation — if citizens could hold unlimited digital euros, they might withdraw all deposits from commercial banks during a crisis, triggering a bank run and undermining the banking system
- C Because EUR 3,000 is the maximum daily spending limit in the EU
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Answer: (B) If there were no holding limit, citizens could move all savings from commercial banks into the CBDC during times of stress — risk-free central bank money is more attractive than bank deposits during a crisis. The EUR 3,000 cap is a compromise: it allows everyday use while preventing the CBDC from competing with bank deposits at scale.

Question 8

The lecture states that 92–97% of money in circulation is created by commercial banks through lending, not by central banks. If a CBDC allows citizens to hold central bank money directly, what risk does this create for commercial banks?

- A Banks would earn higher profits
- B Bank disintermediation — if depositors move savings from commercial bank accounts to CBDC wallets, banks lose their deposit base, which is the foundation of their ability to create money through lending
- C Banks would become more innovative
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Answer: (B) Commercial banks create money by lending against deposits. If depositors shift to CBDC (which is risk-free central bank money), banks lose deposits → they must shrink lending → credit availability decreases → economic activity may slow. This is why holding limits and no-interest rules exist — to prevent CBDCs from draining the banking system.

Question 9

Sweden's Riksbank was among the first central banks to explore a CBDC (the e-krona). What specific trend drove this exploration?

- A Sweden had too much cash in circulation
- B Cash usage in Sweden dropped below 10%, meaning the central bank was losing its direct link to citizens and the payments system was becoming entirely dependent on private companies
- C Sweden wanted to compete with China's e-CNY
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Answer: (B) When cash usage falls to near zero, the central bank's physical money — the only form of risk-free, universally accepted public money — effectively disappears from daily life. Citizens depend entirely on private payment providers. A CBDC restores the central bank's presence in the payment ecosystem.

Question 10

The e-CNY uses “controllable anonymity”: small transactions are anonymous, but large transactions are traceable. Which design principle does this implement?

- A Full anonymity for all transactions
- B A tiered privacy approach — balancing individual privacy for everyday purchases with regulatory compliance (AML/KYC) for large or suspicious transactions
- C Full transparency for all transactions
- D Privacy only for government officials

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Answer: (B) Controllable anonymity is a compromise: buying coffee is anonymous (like cash), but transferring large sums triggers identity verification (like a bank transfer). This tiered approach attempts to preserve cash-like privacy for daily life while meeting anti-money-laundering requirements for significant transactions.

Question 11

Project Helvetia is a Swiss National Bank (SNB) initiative. What type of CBDC does it explore, and with which partner?

- A A retail CBDC for Swiss citizens, in partnership with PostFinance
- B A wholesale CBDC for interbank settlement, in partnership with SIX Digital Exchange (SDX) and the BIS Innovation Hub
- C A stablecoin pegged to the Swiss franc
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Answer: (B) Project Helvetia explores wholesale CBDC — digital central bank money for settling securities transactions between financial institutions. The SNB has explicitly stated it is not pursuing a retail CBDC, preferring to let the private sector handle consumer payments.

Question 12

mBridge is a multi-country CBDC project for cross-border payments. Which specific problem does it aim to solve?

- A Domestic payment speed
- B The high cost, slow speed, and opacity of cross-border payments — currently routed through correspondent banking networks that charge 3–7% and take 2–5 days
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Answer: (B) Cross-border payments today pass through chains of correspondent banks, each adding fees and delays. mBridge (involving central banks from China, Thailand, UAE, Hong Kong, and Saudi Arabia) uses a shared CBDC platform to enable direct central-bank-to-central-bank settlement, potentially cutting costs and time dramatically.

Question 13

The lecture presents programmable money with both promise and peril. The ECB explicitly promises the Digital Euro will NOT be programmable. What is the **key distinction** the ECB makes?

- A The ECB does not understand programmable money
- B The ECB distinguishes between “programmable money” (the currency itself has restrictions on what it can buy) and “programmable payments” (automated payment instructions, like standing orders) — it allows the latter but forbids the former
- C The ECB plans to add programmability later
- D The Digital Euro cannot be used for any automated payments

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Answer: (B) Programmable money means the government decides what you can buy — a form of social control. Programmable payments means you set automated instructions (“pay rent on the 1st”). The ECB’s position: the euro itself must remain neutral and unrestricted; only payment *instructions* can be automated, not the money’s usability.

Question 14

The lecture compares CBDCs, stablecoins, and tokenized deposits. A student asks: “Why can’t stablecoins replace CBDCs?” Which answer identifies the **most fundamental** difference?

- A Stablecoins are faster than CBDCs
- B CBDCs are a direct liability of the central bank (risk-free by definition), while stablecoins are liabilities of private companies (subject to counterparty risk, reserve mismanagement, and regulatory uncertainty)
- C CBDCs use better technology than stablecoins
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Answer: (B) A CBDC is central bank money — it carries zero credit risk because the central bank cannot default in its own currency. A stablecoin is a private company’s promise to redeem at par. That promise depends on the quality of reserves, the honesty of management, and the stability of the issuer. Terra’s UST demonstrated what happens when that promise fails.

Question 15

The US has no active CBDC project. Instead, the Federal Reserve launched FedNow (a real-time gross settlement system) in 2023. How does FedNow differ from a CBDC?

- A FedNow is a CBDC by another name
- B FedNow improves the speed of moving existing commercial bank money (deposits) between banks in real time, but does not create a new form of digital central bank money — it upgrades the rails, not the currency
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Answer: (B) FedNow is infrastructure: it moves existing dollars faster (24/7, in seconds). A CBDC would be a new form of money — digital dollars issued directly by the Federal Reserve. FedNow upgrades the payment plumbing; a CBDC would change the water flowing through it. The US chose faster pipes over new water.

Question 16

The lecture identifies offline capability as essential for financial inclusion. Why is this technically challenging for a CBDC?

- A Because offline transactions do not require any special technology
- B Because preventing double-spending offline requires cryptographic safeguards in hardware — without connectivity, the CBDC system cannot check a central ledger, so the device itself must ensure the same token is not spent twice
- C Because offline payments are illegal
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Answer: (B) Online, double-spending is prevented by checking a central ledger before confirming a transaction. Offline, there is no ledger to check. The device must use secure hardware (tamper-resistant chips) to enforce that tokens are deducted locally before transfer. This is technically difficult and a key area of research (e.g., Project Tourbillon).

Question 17

The e-CNY has 260 million+ wallets but transaction volumes remain less than 0.2% of Alipay and WeChat Pay combined. Critics call it “a solution looking for a problem.” Is this criticism fair?

- A Yes, completely — the e-CNY has no value
- B The criticism is partially fair for the domestic consumer use case (users see no advantage over existing apps), but overlooks the e-CNY's strategic value: maintaining monetary sovereignty, cross-border potential (mBridge), and infrastructure readiness for future crises
- C No — 260 million wallets proves the e-CNY is a success
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Answer: (B) The lecture concludes that technology alone does not drive adoption — a CBDC must offer something users cannot get from existing systems. For Chinese consumers, Alipay and WeChat Pay already work seamlessly. The e-CNY's real value may be geopolitical (cross-border settlement) and structural (central bank presence in digital payments), not consumer convenience.

Question 18

A government proposes using programmable CBDC to distribute disaster relief that can only be spent on food, medicine, and shelter — and expires after 90 days. A civil liberties organization objects. Whose argument is **stronger**, and why?

- A The government's argument is always stronger because it helps disaster victims
- B Both sides have valid points: targeted spending ensures aid reaches its purpose, but the infrastructure for spending restrictions creates a precedent for broader government control over purchasing — the key risk is mission creep, where temporary restrictions become permanent
- C The civil liberties organization is wrong because programmable money has no risks
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Answer: (B) The lecture identifies both promise and peril. Targeted disaster relief is a genuinely useful application. But the same infrastructure could restrict what dissidents can buy, surveil all spending, or impose permanent purchasing limits. The critical question is: who controls the programming, and what legal safeguards prevent abuse?

Question 19

The Digital Euro proposes no interest on CBDC holdings. A student argues: “If the Digital Euro pays no interest and has a EUR 3,000 holding limit, why would anyone use it instead of a bank account?” What is the **best** response?

- A Nobody would use it — the design is flawed
- B The Digital Euro is not designed to replace bank accounts but to serve as a digital complement to cash: universally accepted, privacy-preserving for small payments, usable offline, and backed by the central bank (zero credit risk) — features that bank deposits do not fully provide
- C The ECB will eventually add interest to attract users
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Answer: (B) The Digital Euro fills a gap that bank deposits do not: it is central bank money (risk-free), designed for privacy-preserving small payments (like cash), usable offline, and universally accepted across the eurozone. It complements cash and bank accounts rather than replacing them — the holding limit and no-interest rule are deliberate design choices to prevent competition with bank deposits.

Question 20

The lecture ends by noting that 134 countries (98% of global GDP) are exploring CBDCs, but the US has no active CBDC project. A student argues: “The US is falling behind.” Using the lecture’s framework, evaluate this claim.

- A The student is completely correct — the US will be left behind
- B The claim oversimplifies: the US chose FedNow (upgraded real-time payment rails) over a CBDC, addressing payment speed without the political controversy of central bank digital currency; whether this is “falling behind” depends on whether CBDCs solve problems that real-time payment rails cannot
- C The US does not need any payment innovation
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- D CBDCs are irrelevant for the world’s reserve currency

Answer: (B) The US addressed the speed problem with FedNow (24/7 real-time settlement) without creating a new form of money. Whether it is “falling behind” depends on the question: if CBDCs mainly solve payment speed, FedNow already does that. If CBDCs solve financial inclusion, cross-border settlement, or programmable payments, the US may face a strategic gap — but the political costs of a US CBDC (privacy concerns, banking system impact) may explain the cautious approach.