Pre-Class Discovery Handout: CBDC Business Models

Activity 1: Business Model Canvas Detective

Scenario: Pick ONE CBDC programme from the public record — mBridge, e-CNY, Sand Dollar, Drex, or Helvetia. Investigate its operating model and fill in the Business Model Canvas below. Pay close attention to who owns each block: the central bank, an operating company, a private-sector PSP, or a hybrid arrangement.

Canvas Element	Your Analysis
Value Proposition *What friction does this CBDC remove?*	
Customer Segments *Wholesale or retail? Domestic or cross-border?*	
Channels *Wallet, agent, embedded SDK, interbank rail?*	
Key Resources *What does the issuer own; what does the PSP layer own?*	
Revenue Streams *Where do fees accrue and to whom (qualitatively, no amounts)?*	

Q1: Which canvas block sits with the central bank, and which sit with the PSP layer?

Q2: If the central bank operated the wallet directly, which of the canvas blocks would change?

Q3: If the CBDC programme were shut down tomorrow, what gap would users feel that the existing payment system cannot fill?

Activity 2: Unbundling Map

Scenario: Traditional retail banking bundles many functions under one institution. CBDC programmes attack specific functions while leaving others untouched. Match each CBDC programme below to the banking function it most directly unbundles, then answer the questions.

CBDC Programme		Banking Function Unbundled
mBridge	____	Cross-border correspondent settlement
e-CNY	____	Retail payments and programmable disbursement
Sand Dollar	____	Retail account access in island geographies
Drex	____	Tokenised settlement of retail-adjacent assets
Helvetia	____	Wholesale interbank settlement

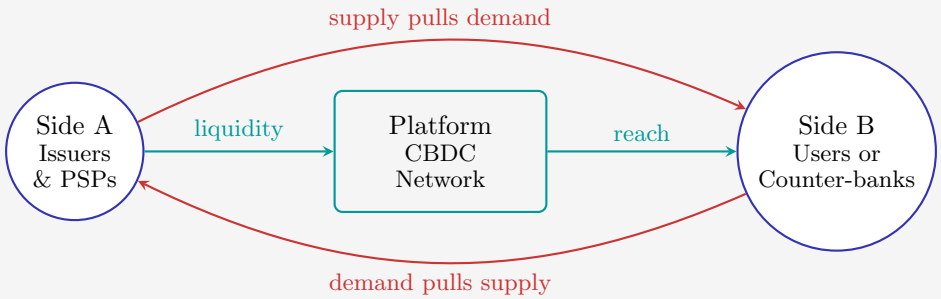
Q1: For each pair, name the friction the CBDC removes that the existing rail does not.

Q2: Which of these programmes has begun adding services beyond its original wedge function? What did it add?

Q3: Why might a CBDC that begins with one narrow function eventually rebundle adjacent services?

Activity 3: The Platform Puzzle

Scenario: A CBDC platform connects two sides — on one side, the wholesale issuers and licensed PSPs; on the other side, end-users (retail) or commercial banks (wholesale). Neither side finds the platform useful without the other.



Q1: Why does a CBDC platform with more participating PSPs attract more end-users (and vice versa)?

Q2: The "chicken-and-egg problem" on a CBDC: which side should the issuer attract first — PSPs or end-users — and why?

Q3: Once a CBDC platform reaches critical mass on both sides, why is it hard for a competing issuer to enter the same corridor space?

Solutions

Activity 1: Business Model Canvas Detective

A1: Model answer for mBridge: The central bank holds Key Resources — the digital claim on the issuer balance sheet. Operating company and participating central banks share Key Activities (settlement orchestration). The PSP-equivalent role at mBridge is held by participating commercial banks, who own Customer Channels (their corporate-treasurer relationships) and Customer Segments (the corporates demanding cross-border corridors). Cost Structure is split: ledger and operating costs sit centrally, while PSP-side onboarding and integration costs sit at each commercial bank. Revenue Streams flow primarily to the commercial-bank intermediaries, which charge corridor-execution fees to corporate clients; the central banks themselves do not charge the platform fees in the commercial sense.

A2: If the central bank operated the wallet directly, the central bank would absorb Customer Channels, Customer Segments, and Customer Relationships. That removes the PSP-tier rent contest entirely and eliminates one of the largest commercial frictions in the current design — but it also imposes a retail-operations burden that central banks were structurally not designed to carry.

A3: Users would lose direct, near-instant settlement against a public-money claim. Existing retail rails settle against private-bank claims that carry counterparty risk; a CBDC removes that layer. Removing the CBDC reinstates the layer along with whatever convenience the wallet experience provided in addition.

Canvas elements (mBridge):

- **Value Proposition:** corridor-pair settlement without the correspondent-bank chain.
- **Customer Segments:** commercial banks needing cross-border corridors; corporate treasurers demanding faster, cheaper settlement.
- **Channels:** permissioned ledger access through participating central-bank rails; commercial-bank API endpoints to corporate clients.
- **Revenue Streams:** corridor-execution fees charged by participating commercial banks to corporate clients; potential platform-operating fees at the central-bank consortium level.
- **Key Resources:** the wholesale digital claim on each participating central bank, plus the operating consortium and shared ledger infrastructure.

Activity 2: Unbundling Map

A1: mBridge → Cross-border correspondent settlement (collapses the multi-link correspondent chain into a single shared-ledger interaction). e-CNY → Retail payments and programmable disbursement (replaces card-rail intermediation for everyday spending and adds programmability the card rail cannot provide). Sand Dollar → Retail account access in island geographies (extends central-bank-money access where physical bank branches are sparse). Drex → Tokenised settlement of retail-adjacent assets (consolidates instrument-asset settlement and money-leg settlement on a shared platform). Helvetia → Wholesale interbank settlement (rebuilds the existing central-bank-money settlement layer on a tokenised rail).

A2: e-CNY has gone furthest down the rebundling path: starting as a wallet, it has progressively added merchant SDKs, transit integration, government-disbursement rails, and programmable-subsidy features. Drex has explicitly designed for tokenised-asset and retail-adjacent service rebundling from launch. mBridge began with a single corridor cluster and has progressively widened the participating central-bank set.

A3: A CBDC that begins narrow has high acquisition cost — regulatory approval, public communication, integration with existing retail payment habits. Once that cost is sunk and trust is established, the marginal cost of adding adjacent services (programmability, payroll, conditional disbursement) is low while the marginal value to users and to the issuer's policy mandate is high.

Activity 3: The Platform Puzzle

A1: This is a **cross-side network effect** on a regulated platform. More participating PSPs mean end-users (or counter-banks on a wholesale platform) have more places to use the CBDC, which makes joining the platform more attractive to additional end-users. Simultaneously, more end-users mean each PSP has a larger addressable customer base, which attracts additional PSPs. Each side's growth reinforces the other's, and the issuer benefits from rising adoption on both sides without bearing the customer-acquisition cost itself.

A2: Most CBDC programmes have attracted the **supply side** — PSPs and participating banks — first, because PSPs can be onboarded by mandate or by negotiated agreement, while end-users must be persuaded one wallet at a time. The pragmatic logic is that if PSPs are pre-positioned, end-user onboarding has somewhere to land; trying to attract end-users first stalls because there are no places to spend or transfer the CBDC. This mirrors the cold-start problem in commercial two-sided platforms.

A3: Once both sides are populated, the platform enjoys a self-reinforcing loop that creates a **structural moat**. A competing issuer in the same corridor would need to simultaneously attract PSPs (who are already integrated with the incumbent platform and have switching costs) and end-users (who already hold the incumbent CBDC and have habit-based stickiness). The incumbent's network utility grows with every additional participant, while the competitor's offering remains empty until both sides arrive simultaneously — which they rarely do without a coordinating shock such as a regulatory mandate or a critical outage.

