

The Cross-border Use of Digital Currencies

Dr. Chuanwei Zou

Nov 15th, 2022

Content

- G20 discussion on digital currencies' use in cross-border payments
- Economics of current cross-border payment systems
- The spectrum of digital currencies and their implications on cross-border payments
- How to use CBDC in cross-border payments: wholesale vs retail
- Innovation of SDR with CBDCs and multi CBDC bridge

G20 Discussion on Digital Currencies' Use in Cross-border Payments

2020

- **CPMI: Enhancing cross-border payments: building blocks of a global roadmap - State 2 report to the G20 (Jul 2020)**
- **FSB: G20 roadmap for enhancing cross-border payments: Consolidated progress report for 2022 (Oct 2020)**

2021

- **CPMI, BIS Innovation Hub, IMF and World Bank: Central bank digital currencies for cross-border payments: Report to the G20 (Jul 2021)**

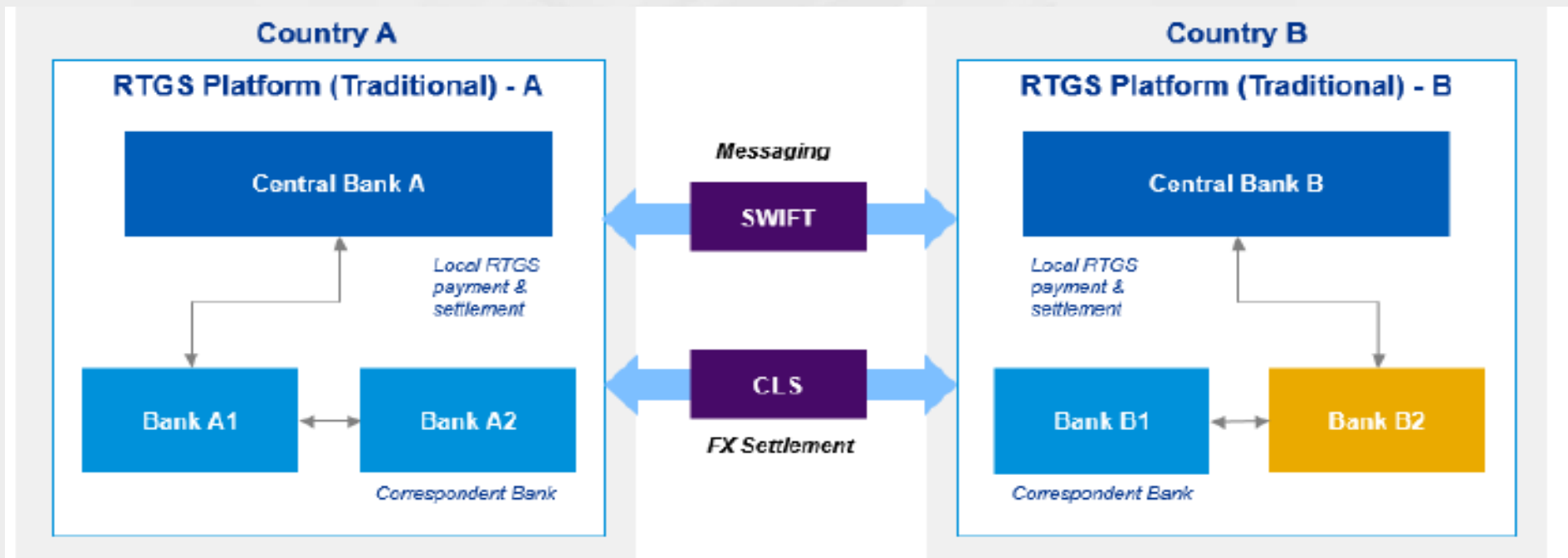
2022

- **CPMI, BIS Innovation Hub, IMF and World Bank: Options for access to and interoperability of CBDCs for cross-border payments: Report to the G20 (Jul 2022)**

- E18: Fostering the soundness of global stablecoin arrangements for cross-border payments
- E19: Factoring an international dimension into CBDC design

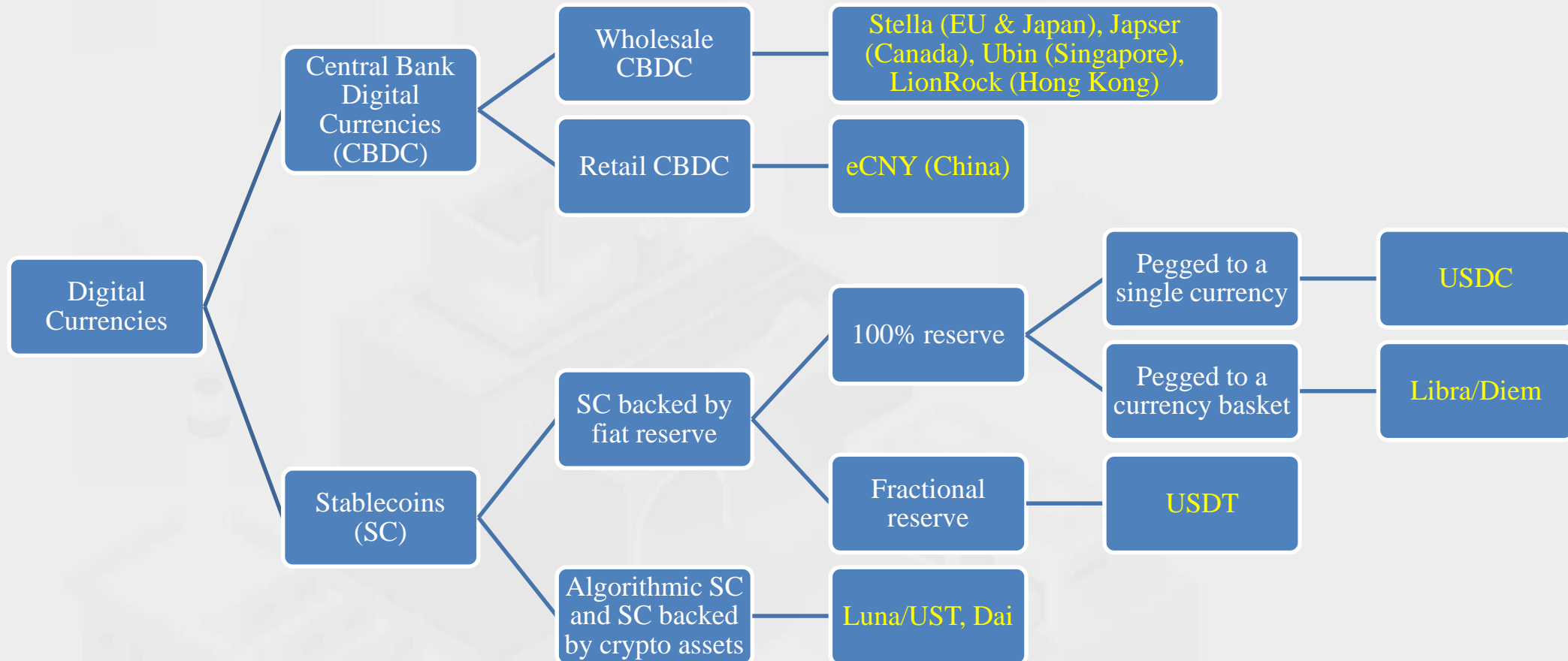
Economics of Current Cross-border Payment Systems

- Use commercial bank money
- Money flow
 - ✓ Prefunded nostro and vostro accounts at correspondent banks
 - ✓ High liquidity requirement
 - ✓ Costs due to KYC, AML, and CFT in the correspondent bank network
 - ✓ Rice, *et al.* : On the global retreat of correspondent banks (Mar 2020)
- Information flow
 - ✓ Messaging systems represented by SWIFT
 - ✓ Implications for monetary sovereignty



Source: Bank of Canada, Bank of England, and Monetary Authority of Singapore, 2018, "Cross-border Interbank Payments and Settlements".
© 2021

The Spectrum of Digital Currencies

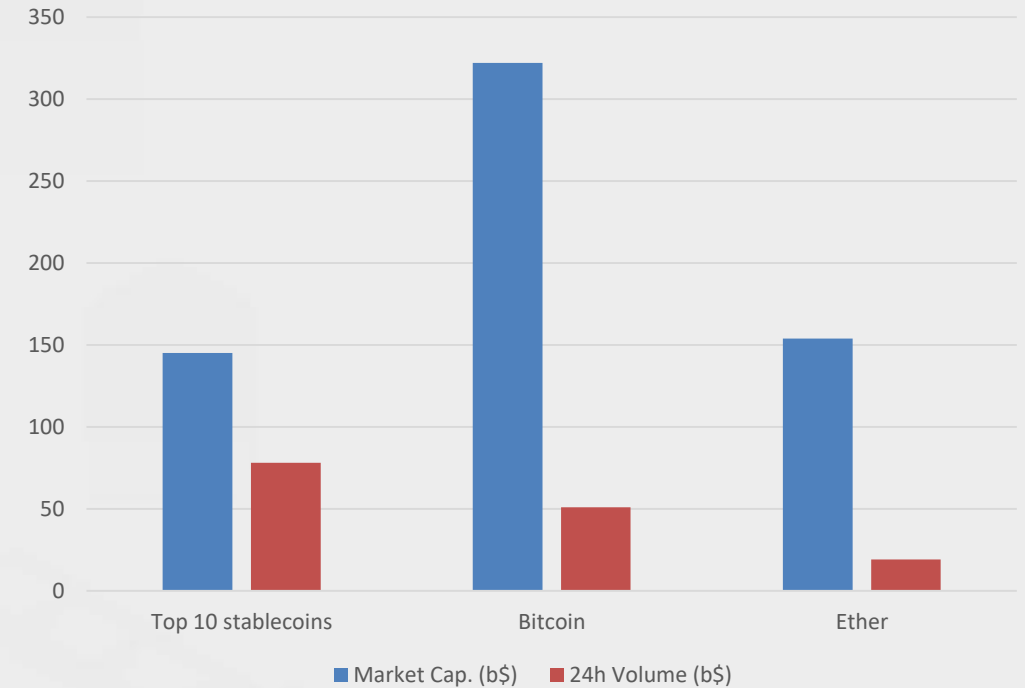


Comparison between Token and Account Systems

	Token System	Account System
Accessibility	<ul style="list-style-type: none"> • Support decentralized management • Highly open 	<ul style="list-style-type: none"> • Centrally managed • Preapproval needed
User management and privacy protection	<ul style="list-style-type: none"> • Users need to prove “I know” • Support controlled anonymity 	<ul style="list-style-type: none"> • Users need to prove their identities • Based on real name
Features in payment application	<ul style="list-style-type: none"> • Combination of money flow and information flow • Peer to peer payment • Settlement upon payment 	<ul style="list-style-type: none"> • Separation of money flow and information flow • Money movement represented by book-entry accounting in the hierarchy of account system • “T+n” settlement
Cross-border use	<ul style="list-style-type: none"> • Cross-border by nature 	<ul style="list-style-type: none"> • Cross-border use supported by the correspondent bank model

Controversies Surrounding Stablecoins

- **Stablecoins are mainly used on crypto exchanges rather than in real world scenarios:**
 - ✓ A large percentage of transaction volume is cross-border.
 - ✓ PWG, FDIC, and OCC: Stablecoins are primarily used in the United States to facilitate trading, lending, or borrowing of other digital assets, predominantly on or through digital asset trading platforms. (Nov 2021)
- **Stablecoins pegged to a single currency and backed by 100% fiat reserve belong to e-money.**
 - ✓ They can be an effective instrument of cross-border payments but can also cause currency substitution.
 - ✓ International regulatory coordination is insufficient.
- **Stablecoins backed by factional reserve and algorithmic stablecoins pose serious risks to financial system and should be prohibited.**
 - ✓ In May 2022, the collapse of Luna/UST caused an estimated loss of \$300b in the crypto market.



Source: Coinmarketcap

Rationales of Using CBDC in Cross-border Payments

- **Use central bank money, which is safer than commercial bank money and stablecoins.**
- **Combination of money flow and information flow:**
 - ✓ In theory, no reliance on messaging systems such as SWIFT.
 - ✓ A better approach to protect monetary sovereignty.
- **Users from different countries can use CBDC to directly transact with each other.**
 - ✓ Less reliance on correspondent bank network and much lower liquidity requirement.
 - ✓ Cross-border payments with CBDC will be faster and cheaper.
- **However, it is not clear whether retail CBDC or wholesale CBDC should be used:**
 - ✓ China opened the eCNY system to foreign users in the 2022 Beijing Winter Olympics venues.
 - ✓ Stella (EU & Japan), Ubin-Jasper (Singapore & Canada), and Inthanon-LionRock (Thailand & Hong Kong) tested payment versus payment (PvP) with wholesale CBDC.
 - ✓ Wholesale CBDC is preferred but interoperability problem must be solved.

Use of Retail CBDC in Cross-border Payments

Pro

- Foreign users only need CBDC wallets to own and use CBDC. It is much easier to open CBDC wallets than bank accounts.
- Technologically, no difference between CBDC wallets held by domestic and foreign users.
- Users can trade with each other in a peer-to-peer approach. No difference among onshore, cross-border and offshore CBDC transactions.
- No reliance on commercial banks as the intermediaries.

Con

- Currency substitution.
- Limitation due to M0 status.
- Limited use cases: Mainly belong to current account transactions.
- Foreign users may be subject to stricter quota limits due to KYC requirements.
- Limitation due to capital convertibility.
- Protection of foreign users' data privacy.

Use of Wholesale CBDC in Cross-border Payments

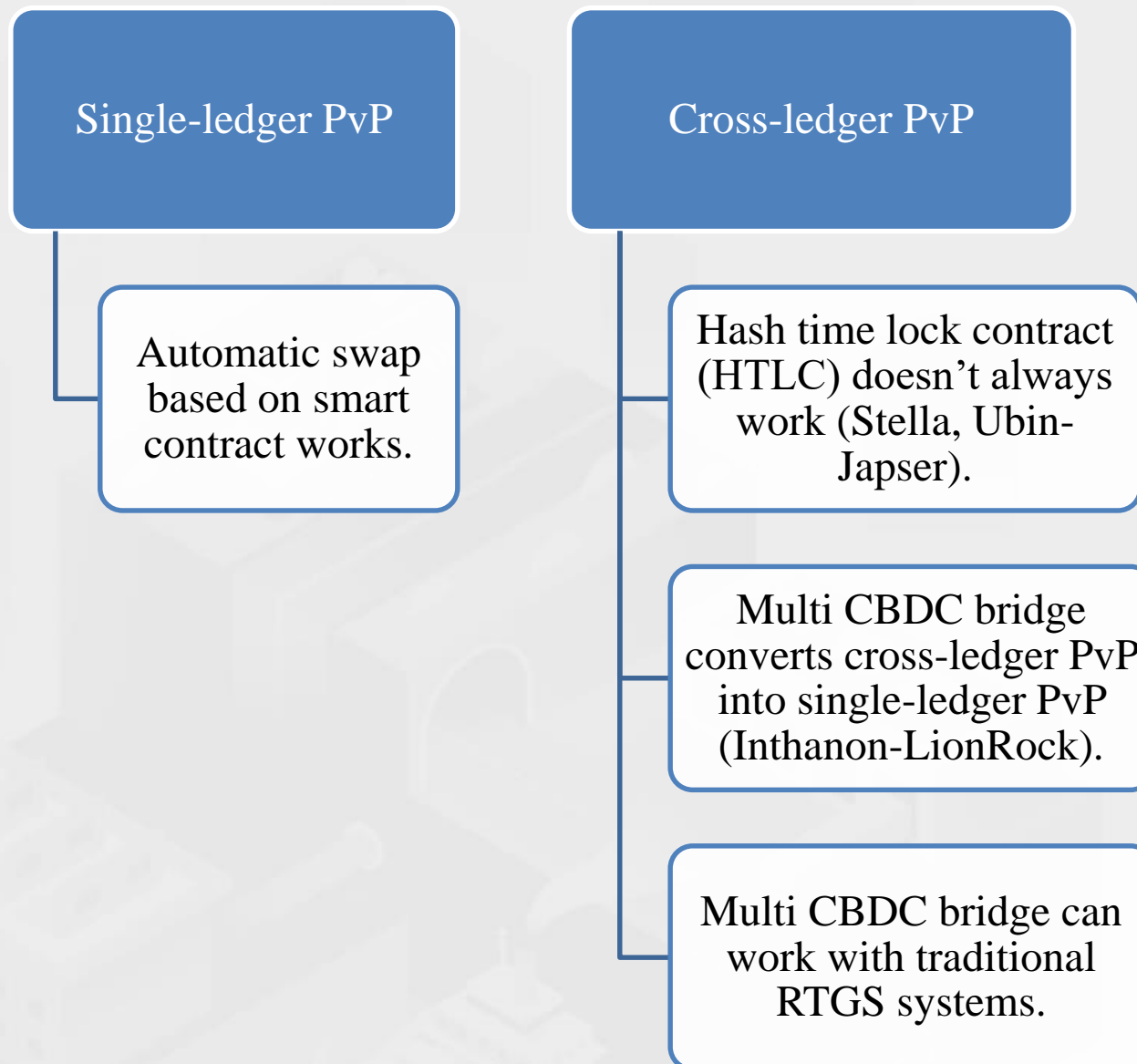
Pro

- An upgrade on the correspondent bank model with simplified correspondent bank network and no liquidity lockup in the nostro-vostro accounts.
- Support large-amount transactions.
- Potential application in cross-border financial transactions and commodity trade.
- Limited impacts on other countries' monetary sovereignty.

Con

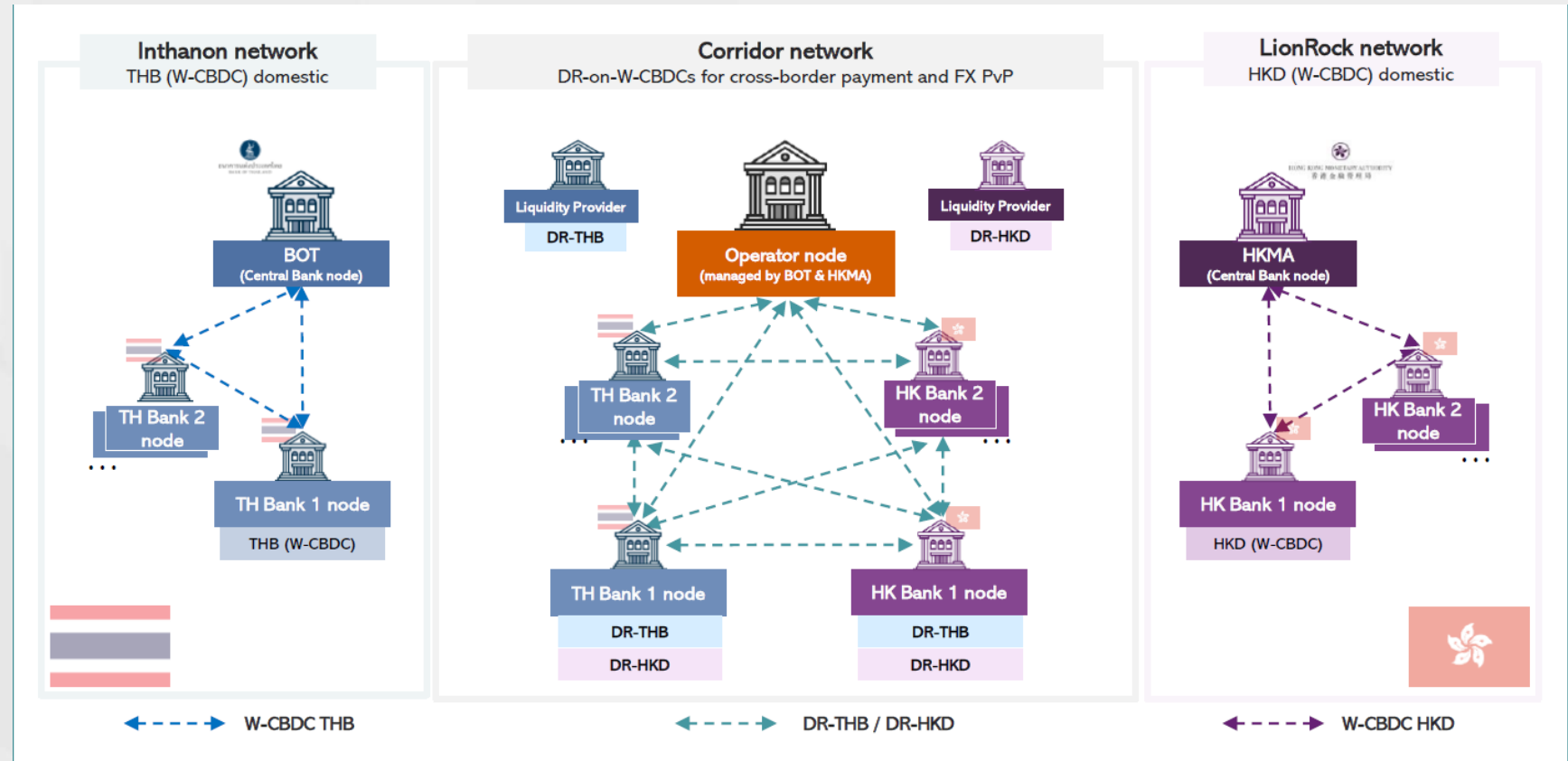
- Interoperability problem: How to implement PvP with different CBDC systems and between CBDC systems and traditional RTGS systems.

Interoperability with Wholesale CBDC



Past and Current Tests on Multi CBDC Bridge

- Inthanon-LionRock (Thailand & Hong Kong)
- mBridge (Hong Kong, Thailand, United Arab Emirates, China)
- Prosperus (France & Tunisia)
- MAS (France & Singapore)
- Aber (Saudi Arabia & United Arab Emirates)
- Dunber (Australia, Malaysia, Singapore & South Africa)
- Jura (France & Switzerland)



Source: Bank of Thailand and Hong Kong Monetary Authority, 2020, "Inthanon-LionRock: Leveraging Distributed Ledger Technology to Increase Efficiency in Cross-border Payments".

Open Questions with “Wholesale CBDC + Multi CBDC Bridge”

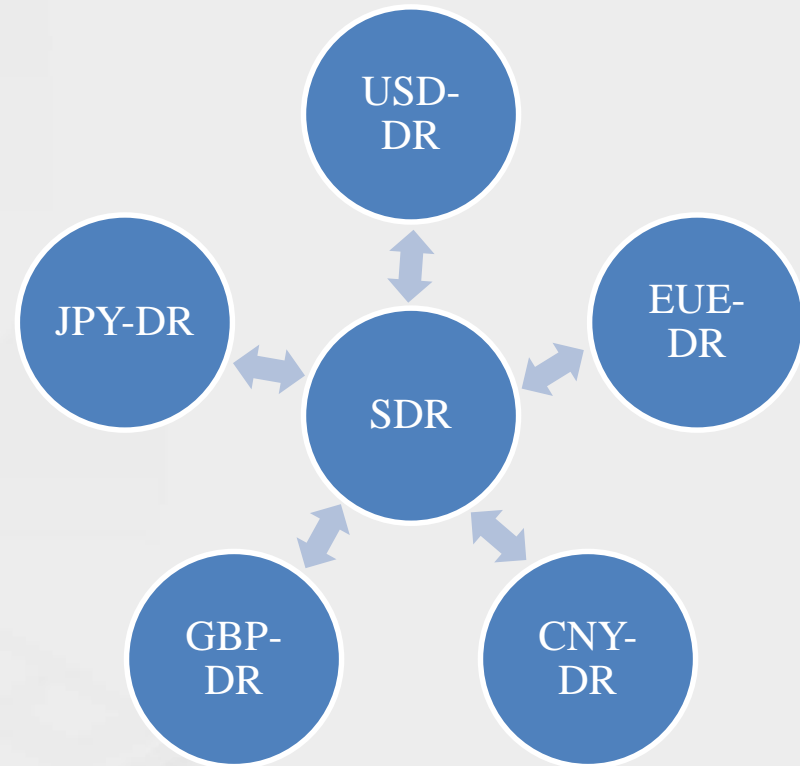
- Which CBDC can join the multi CBDC bridge? What governance mechanism should be used to onboard more CBDC?
- The eligibility and onboarding process of selected commercial banks in different countries.
- How to ensure the issuance of depository certificates on the multi CBDC bridge is 100% backed by CBDC frozen in the domestic CBDC system?
- Limits on foreign banks' indirect holding of CBDC on the multi CBDC bridge.
- The development, operation, upgrade, error management and dispute resolution of the multi CBDC bridge.
- How to optimize from a clean slate?

Governor Xiaochuan Zhou's 2009 Proposal on SDR Reform

- **A super-sovereign reserve currency managed by a global institution not only eliminates the inherent risks of sovereign fiat currencies, but also makes it possible to manage global liquidity.**
- **SDR has the features and potential to act as a super-sovereign reserve currency:**
 - ✓ Set up a settlement system between SDR and other currencies, making it a widely accepted means of payment in international trade and financial transactions.
 - ✓ Actively promote the use of SDR in international trade, commodities pricing, investment and corporate book-keeping.
 - ✓ Create financial assets denominated in SDR (note: World Bank issued SDR-denominated bonds in 2016).
 - ✓ The basket of currencies forming the basis for SDR valuation should be expanded to include currencies of all major economies, and GDP may also be included as a weight (note: RMB was added to the SDR currency basket in 2016).
 - ✓ The creation of SDR can be shifted from a purely calculation-based system to a system backed by real assets, such as a reserve pool, to further boost market confidence in its value.

CBDCs backed SDR

- CBDCs are mapped onto the multi CBDC bridge in the form of depository certificates (DRs).
- Use smart contract to combine DRs with pre-specified weights -> SDR.
- SDR exists as a digital token on the multi CBDC bridge and can be held by the IMF, central banks, and selected commercial banks from IMF member countries.
- Trading between SDR and constituent currencies can take place on the multi CBDC bridge. PvP can be achieved via smart contract.
- Introduce SDR denominated assets to manage the mismatch between SDR demand and SDR holding of different SDR users.
- SDR interest rate will be determined by market forces instead of pure calculation.



Principles of Cross-border Use of Digital Currencies

- The ultimate goal should be to improve the efficiency and lower the cost of cross-border payments.
- Every country's monetary sovereignty should be respected. Currency substitution should be avoided.
- Retail CBDC and single-currency stablecoins can be opened to foreign users but should mainly serve their need when traveling in the host country rather than in their home countries.
- Risks to financial stability and cross-border capital flows should be carefully managed. Rights of financial consumers, especially their data privacy, should be thoroughly protected.
- "Wholesale CBDC + multi CBDC bridge" has the potential to become the foundation of the next-generation international financial infrastructure and lead to changes in international financial governance.



Thank you!