mojaloop

CBDC Initial use cases: Draft proposals

Three potential use cases explored

Reminder of the group objective

See how CBDC can be used for the settlement of payments

Three potential use cases

- Settlement of payments cleared through a single domestic instant payments systems using CBDC
- Settlement of payments cleared through two domestic linked instant payments systems using CBDC
- Settlement of cross-border payments cleared through two linked instant payments systems using CBDC

Use case 1: Settling payments with CBDC for a domestic IIPS

Background information

- Typically RTGS systems present some limitations
 - They don't operate 24/7
 - They are based in a technology that doesn't offer programmability of money
 - Access to participants is regulated and therefore limited
- Not all jurisdictions have implemented a RTGS system.
- Generally speaking, it is safer and cheaper for participants in an IPS to settle in central bank money rather than using commercial bank funds.

Objectives

- Assess the efficiency gains offered by CBDCs, such as:
 - Movement to atomic settlement.
 - 24/7 availability for liquidity cover changes.
- Understand whether the use of CBDCs could enhance access for smaller parties

How does it work?

- The clearing of a payment will be performed by the IIPS. We assume that this applies to an IIPS in which some participants already have access to accounts at the central bank denominated in CBDC.
- The central bank offers wholesale CBDC for purchase by large commercial banks at a fixed rate against the fiat currency.
 - We assume a conversion rate of 1:1 between fiat and CBDC
- Large banks purchase CBDC from the central bank.
- The IPS declares that its settlement currency will be the CBDC.
- Large banks provide liquidity cover by forwarding CBDC to the IPS. The CBDC is controlled by the IPS, so participants cannot withdraw liquidity from the scheme without the consent of the IPS once it is committed.
- Small FIs provide liquidity cover by advancing fiat currency to the IPS.
 - The IPS uses this to purchase CBDC from a(ny) large bank at the fixed rate and credits the CBDC to the small participant's liquidity cover.
- All the participants can now settle among each other in CBDC.
- When a participant wants to withdraw liquidity cover from the system (e.g. because they are a long-term creditor) subject to IPS approval for the withdrawal, natch:
 - If the participant is a large bank, the IPS simply returns the CBDC to the participant.
 - If the participant is a small FI, the IPS sells the CBDC to a large bank at the fixed rate and returns the fiat to the participant.

Issues

- What are the regulatory consequences of this proposal?
- Does this require the IIPS scheme to be allowed to hold CBDC?
 If so, what are the consequences of this?
- In what sense is this a wholesale or a retail CBDC?
- Why don't all types of FI have access to central bank funds?
- Relations between possession of CBDC and access to RTGS
 - Is there a way of implementing a CBDC which partly or wholly replaces an RTGS?

Use case 2: Settling with CBDCs between multiple IIPSs in a single jurisdiction

Scenario

- Some jurisdictions support more than one IPS
 - Examples: the Philippines, Kenya, Europe, perhaps India in the future.
- Typically, this problem is solved in one of two ways:
 - By introducing an overarching scheme in which both schemes settle.
 - Example: TCIB in SADC
 - This is an organisationally expensive form of solution
 - By using a correspondent relationship where a single FI is a member of both schemes.
 - This is the Mojaloop approach.
 - But it's not clear that it would be easy to support this arrangement in all schemes—for instance, where schemes are restricted to a particular type of institution.
 - This is a costly form of solution

Objectives

- Allow multiple IIPS schemes in a single jurisdiction to settle funds between each other...
- ...without requiring correspondent bank relationships to manage the settlements...
- ...and without requiring Fls to manage the credit risks associated with settling.
- ...using CBDCs

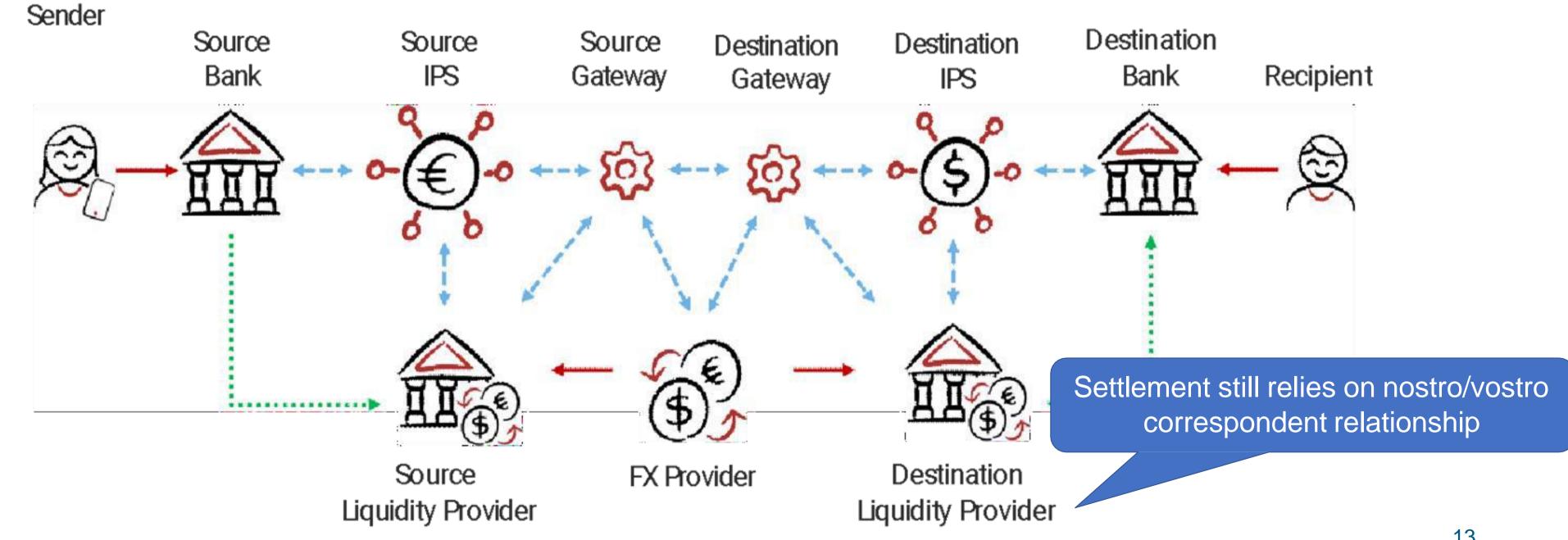
How does it work?

- We imagine two IIPSs, Scheme A and Scheme B.
- The two IIPSs exchange messages about inter-scheme transfers using an adapter (in the Mojaloop world, this component is called a Cross-Network Provide or CNP).
- Each scheme records its own obligations. wCBDC systems act as a bridge for the PSPs' customers to transfer funds among themselves. Although customers will not hold CBDCs, the wCBDC could be used to switch, clear and settle customer transfers initiated from non-CBDC systems
- Since both schemes are in the same jurisdiction, no currency conversion is required for inter-scheme transfers.
- We assume for the moment that both schemes have the same settlement structure, and for simplicity that this structure is
 multilateral net settlement. Other settlement structures, together with the differences between the settlement structures between
 schemes, are left for later analysis but are assumed to be soluble.
- Obligations between Scheme A and Scheme B are recorded in a correspondent account in each scheme
 - In Scheme A, this is "Due to/from Scheme B", and in Scheme B it is "Due to/from Scheme A".
 - The balances in these accounts will be mirror images of each other, and will represent the net obligations of one scheme to another.
- Settlement within each scheme will include the correspondent accounts. So, if a customer of FI1 in Scheme A has transferred 10 E\$ to a customer of F2 in Scheme B:
 - FI1 owes 10 E\$ to the "Due to/from Scheme B" account in Scheme A
 - The "Due to/from Scheme A" account in Scheme B owes 10 E\$ to FI2.
 - Scheme A owes 10 E\$ to Scheme B
- Settlement between schemes will be done via a transfer of CBDC from the debtor scheme to the creditor scheme.
- Settlements may be synchronised between the two schemes, in which case the CBDC can be transferred as part of the
 settlement process and no liquidity cover is required; or they may happen on different schedules, in which case schemes may
 need to provide liquidity cover to their counter-schemes.

Use case 3: Cross-border CBDC

Current state: Instant Payments adoption is quite high to the point that the focus has switched to interoperability

- Today adoption of domestic instant payments has increased significantly.
- Whilst a lot of work has been conducted in interconnecting domestic instant payments so that cross-border payments can be cleared through this linkage, settlement of the payments still relies on the traditional correspondent banking. This is the case for Nexus.



Current state: there are a lot of challenges with the settlements of cross-border payments, which makes the delivery of the G20 FSB cost KPI challenging

Target

FSB Cost KPI

- For retail: 1% global average cost of payments, with no corridors with costs higher than 3%
- For remittance: Reaffirm UN SDG: Global average cost of sending \$200 remittance to be no more than 3% by 2030, with no corridors with costs higher than 5%

Source: FSB

Settlement Risk



- Risk that the liquidity are not available when required
- The settlement risk is particularly high for EMDE currencies as usually EMDE FX trades involves multiple transactions legs

Challenges

Settlement duration

 Many EMDE FX trade requires the use of a vehicle currency (e.g., USD), leading to multiple intermediaries, and different rigid

settlement cycle

Liquidity Constraints



 It is actually not easy to access liquidity in some EMDE currencies EMDE currencies are subject to stringent regulatory requirements, including restrictions on capital flows, data localization and documentary checks

The idea for the use case would be to look at different models for settlement using CBDC, as using the traditional model will make the delivery of the cost KPI very challenging.

Assumptions and potential use cases

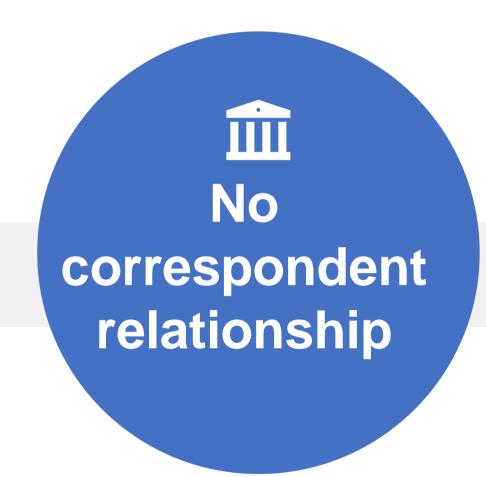
Assumptions

- It is assumed that the payments will be cleared through interconnected IPS systems ie this use case only focusses on the settlement of the payments.
- By settlement, we mean access to the required liquidity in the right currency and record of the position.

Potential use cases could include

- Settlement of payments cleared through Nexus
- Settlement of payments cleared through two instances of Mojaloop systems replacing the cross-network provider. Today the cross-network provider
 - Is a technical component that creates messaging interoperability between two instant payments systems
 - An entity that operates as liquidity provider.

Objectives: suggest a different settlement model to settle a crossborder payments cleared through two linked IPS



 Model does not rely on the traditional correspondent banking network, from which smaller parties are often excluded



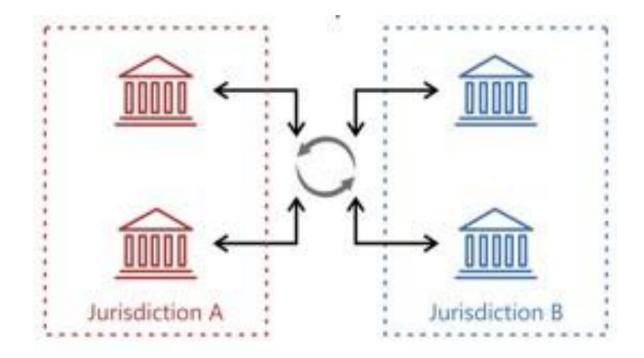
 That do not leverage existing costly alternative network (e.g Visa) making this



That leverages CBDC

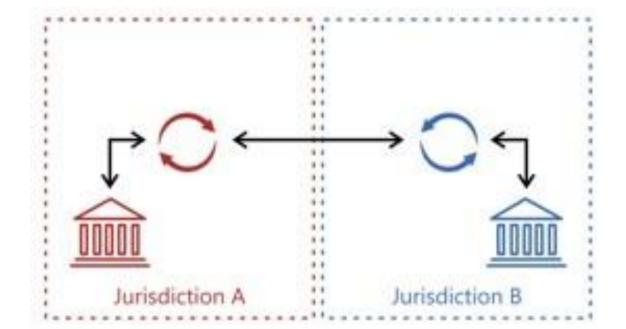
There are different models to settle a cross-border payment cleared through two linked IPS systems via CBDC

Model 1 Single platfom



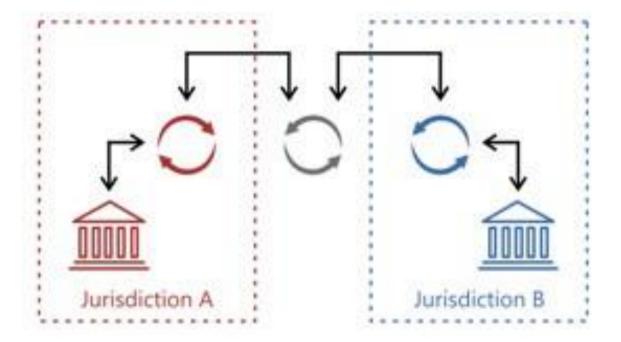
- Single common technical infrastructure and potentially common rulebook
- Example: M-Bridge
- FX happens on the platform

Model 2 Bilateral links



- CBDC systems are directly linked through technical and contractual agreements
- Example: Cedar- Ubin +
- FX can happen through a liquidity bridge

Model 3 Hub and spoke



- A common hub connects to separate CBDC systems of participating jurisdictions
- FX can take place via different options for the hub and spoke
 - MODEL 3A: Automated money maker – Example: Mariana
 - MODEL 3B Vehicle CBDC currency

Looking at the pros/cons of each model, we want to explore model 3

Model 1 Single platfom

Model 2 Bilateral links

Model 3 Hub and spoke

- Question around entity that provide the common infrastructure/governance framework
- Required alignment on regulations, technical standards and business practices such as fee structure, speed of payment processing, AML/CFT arrangements, exchange rates and dispute resolution. As a result, the model is not scalable.
- Limited operational resilience

- Question around entity that provide the common infrastructure/governance framework
- Limited operational resiliency
- Limited scability

- Allow to control and monitor flows monitor transaction flows more directly
- Reduce cost of settlements as facilitate FX PvP
- Attractive model in smaller jurisdictions
- aditional harmonisation of payment messages, compliance and data processing.
- Lowering legal uncertainty around settlement finality, and hence increase speed

 Allow to control and monitor flows monitor transaction flows more directly

- Lower costs of implementation compared to the other models
- High scalability
- Greater efficiency in terms of accomplishing compliance duties on an ongoing basis and could reduce the aforementioned legal uncertainty



Proposal: Explore the different approaches and develop one, focussing on a single corridor where two instant payments are already or about to be linked

1 Step 1

Develop an assessment matrix

2 Step 2

Explore and assess the various models for a selected corridor

Step 3

Publish the matrix used to assess the models

Step 4

Develop the model selected and commit the code against Mojaloop repository

Models

- Model 1: settlement is done through a multi-CBDC platform
- Model 2: settlement is done through CBDC bridges
- Model 3a: settlement is done with AMM
- Model 3b: settlement is done through a vehicle CBDC
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Suggestion is to focus on Use Case 3

Reasons for this suggestion

- Use Case 1 is probably already delivered => To be confirmed after the meeting with Raunak.
- Use Case 2 is an application of Use Case 3. Also, there are limited jurisdictions with several domestic instant payments systems.

Next steps

- Decide the corridor
- Assign resources to look at this corridor and the various models

Any questions?