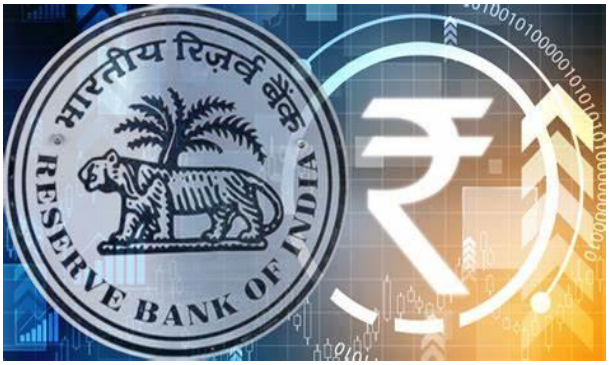
CBDC Concept Note – India's move towards digitalizing currency



The Reserve Bank of India ("**RBI**") has released a concept note on Central Bank Digital Currency ("**CBDC**") on October 7, 2022 ("**Concept Note**"). The Concept Note sets out the objectives, motivations, benefits, risks, designs, and other features of the digital rupee and highlights considerations such as technology and design choices, security and anonymity, impact on monetary policy, banking systems, financial market systems, etc. The Concept Note takes India a step forward towards digitizing its currency and is released with an aim of creating awareness of e-rupee ("**e-₹**"). A brief snapshot of the Concept Note is set out below:

Motivations for e-₹: In India, there has been a shift in adaptation of the present payment systems such as NEFT, RTGS, UPI, etc. that are affordable, accessible, convenient, efficient, and secure. RBI has maintained that private virtual currency is at odds with the historical concept of money. It has consistently noted that cryptocurrency is not a commodity and has no intrinsic value and de-centralized finance will disrupt the traditional financial system and destabilize the fiat economy. e-₹ is intended to leverage on the benefits of digital currency *viz.* innovations in payments, financial inclusion, reduction in costs associated with physical cash management, cross-border payment efficacy, etc. without the associated risks of private currencies such as price volatility and proliferation of crypto assets.

What is e-₹: The digital rupee will be legal tender issued by the RBI in a digital form. It will be a sovereign currency exchangeable at par with existing fiat currency. Similar to the paper currency, e-₹ will be acceptable as a medium of payment, store of value and legal tender. The difference between CBDC and commercial bank money will be that CBDC will be issued by RBI and will be a liability in the books of RBI. This would ensure that RBI can meet its obligations using its own non-redeemable money. e-₹ promises to offer the public access to digital money free from credit and liquidity risk.

Design and architecture: RBI proposes the following design considerations for a resilient, secure, and scalable infrastructure for the digital currency:

- *Type*: RBI is considering launching two broad types of e-₹: retail CBDC ("**CBDC-R**") and wholesale CBDC ("**CBDC-W**"). CBDC- R could be made available to all users in the private sector, non-financial consumers and business. The primary use of CBDC-R would be akin to paper currency. CBDC-W could be used for wholesale payments such as interbank payments or securities settlement. Case-in-point is Project Jasper in Canada and Project Ubin in Singapore. Adoption of CBDC-W will depend on integration with and upgrade of the existing exchanges and trading infrastructure and whether the cost of CBDC-W is less than the cost of existing settlements.

- *Model*: RBI has considered multiple models for CBDC, including a Direct Model, Two Tier Model and Hybrid Model. A Direct Model which makes RBI responsible for managing all aspects of CBDC has been currently ruled out due to the burden on RBI for onboarding customers, KYC, etc. The Intermediate/ Two Tier Model has been considered to be the most relevant in India wherein the issuer of CBDC would be RBI, but the distributors would be intermediaries such as commercial banks. The customer onboarding, KYC, ledger maintenance etc. would be done by intermediaries and RBI would only track the wholesale CBDC balances of the intermediaries.

- *Remunerated vs. Non-remunerated CBDC*: RBI is considering whether CBDC should be interest bearing. While this would certainly incentivize the shift from paper currency to digital currency, designing CBDC like a 'deposit (bearing interest)' is likely to disrupt the financial system resulting in loss of deposits with banks, impeding their credit creation capacity and increasing lending rates. Contrastingly, while non-remunerated CBDC is likely to hinder the switch from bank deposits to CBDC, it could still be an attractive medium of payment. RBI is currently considering non-remunerated CBDC as it would be least disruptive.

- *Account vs. token based*: A token based CBDC system would involve a type of digital token issued by and representing a claim on RBI. A token CBDC is a 'bearer-instrument' like banknotes, meaning that whoever holds the tokens at a given point in time would be presumed to own them. In contrast, an

account-based system would require the keeping of a record of balances and transactions of all holders of the CBDC and indicate the ownership of the monetary balances. The verification of both systems would also differ, i.e. a person receiving a token will verify that his ownership of the token is genuine, whereas an intermediary verifies the identity of an account holder. RBI is considering token-based CBDC for CBDC-R and account-based system for CBDC-W.

- *Technology*: Technology considerations will be the focal point for developing a scalable, stable, tamper-proof financial system that offers cross-platform support and is able to integrate with other IT platforms, has configurable workflows and uses highly evolved fraud monitoring framework. The basic requirements of the technology architecture include zero downtime, zero frauds, able to handle high volume of transactions and zero loss due to cyberattacks. The options include conventional centrally controlled database or distributed leger technologies.

Recoverability: In account-based models, recoverability is not an issue as the identity of user is available. In a token-based system, the model can support two types of wallets, a custodian based where the wallet is held with a token service provider and is recoverable with the wallet pin, address etc. and user held model where the responsibility of the key is with the user and its device.

Offline Functionality: As financial inclusion is one of the key drivers of e-₹, offline functionality will be a key design consideration. The use of offline transactions would be beneficial in remote locations and offer availability and resilience benefits when electrical power or mobile network is not available. For offline transactions, the wallets must be able to independently verify the authenticity of any CBDC transaction without communicating with the server during the transactions.

Interoperability: RBI's aim is that e-₹ should be able to utilise the current payments infrastructure like UPI, digital wallets like Paytm, Gpay etc. Integrating CBDC into the broader payments landscape of India would possibly help drive end user adoption (both for the public and merchants) and will obviate the need for the creation of a parallel infrastructure. Collaborating with central banks of other countries would also be required to test the cross-border efficacy of CBDC. Case-in-point is Project Dunbar which brings together the central banks of Australia, Malaysia, Singapore and South Africa with the BIS Innovation Hub to test the use of CBDCs for international settlements.

Resource Intensiveness: The resource intensiveness also needs to be factored in while designing CBDC. For centralised systems, the resource consumption is comparable with that of existing payment systems. For distributed systems, it depends on whether there is any consensus protocol. CBDCs would not be 'mined' unlike private cryptocurrencies; CBDC will be issued by RBI and for account-based systems, users can simply opt for conversion of the bank's existing balances to CBDC balances. However, in the case of token-based systems, unique tokens based on agreed techniques would need to be created, which may be slightly resource intensive.

Privacy and data protection: CBDC ecosystems may be at similar risk for cyber-attacks that the current payment systems are exposed to. The token creation process should ensure the highest levels of the cryptography and the transaction of tokens also needs to be secured to ensure trusted environment.

Consumer Protection: CBDT will generally come with the risks of other digital currency including digital fraud, data breaches, lack of privacy, etc. The development of a secure system, countering of accountability risk and the establishment of an efficient grievance redressal system is likely to combat the risks associated with e-₹.

Anonymity v. AML/CFT: Degree of anonymity would be a key design decision for any CBDC. While digital currency should promise to maintain certain anonymity, recent trends have demonstrated the use of digital assets for money laundering and financing terrorism. The balance between Anti-Money Laundering and Combating Finance of Terrorism and anonymity is the principle of 'managed anonymity' i.e. anonymity for small value and traceable for high value, akin to anonymity associated with physical cash.

Launch and next steps: RBI is currently engaged in working towards a phased implementation strategy, going step by step through various stages of pilots followed by final launch. RBI will build a prototype, test the idea in a controlled environment, perform test cases with positive and negative scenarios to evaluate the durability and resilience of e-₹ and finally conduct pilot projects with a diverse user based.

With the advent of cutting-edge technologies, digital currency will be the next milestone in monetary history. RBI notes that a sovereign digital currency issued by the central bank stands to offer the benefits of virtual currency without the potential risks associated with private virtual currencies.

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