



Concept Note on Central Bank Digital Currency - Our Key Takeaways

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“In view of the associated risks, it has been decided that, with immediate effect, entities regulated by the Reserve Bank shall not deal in VCs or provide services for facilitating any person or entity in dealing with or settling VCs. Such services include maintaining accounts, registering, trading, settling, clearing, giving loans against virtual tokens, accepting them as collateral, opening accounts of exchanges dealing with them and transfer / receipt of money in accounts relating to purchase/ sale of VCs.

Regulated entities which already provide such services shall exit the relationship within three months from the date of this circular.

These instructions are issued in exercise of powers conferred by section 35A read with section 36(1)(a) of Banking Regulation Act, 1949, section 35A read with section 36(1)(a) and section 56 of the Banking Regulation Act, 1949, section 45JA and 45L of the Reserve Bank of India Act, 1934 and Section 10(2) read with Section 18 of Payment and Settlement Systems Act, 2007.”

The above circular dated April 06, 2018, issued by the Reserve Bank of India, prohibited the dealing of Virtual Currencies in India. This circular was then set aside by Hon’ble Justice V Ramasubramanian vide his elaborate and interesting judgment dated March 04, 2020. It was held that:

“...While we have recognized elsewhere in this order, the power of RBI to take a pre-emptive action, we are testing in this part of the order the proportionality of such measure, for the determination of which RBI needs to show at least some semblance of any damage suffered by its regulated entities. But there is none. When the consistent stand of RBI is that they have not banned VCs and when the Government of India is unable to take a call despite several committees coming up with several proposals including two draft bills, both of which advocated exactly opposite positions, it is not possible for us to hold that the impugned measure is proportionate.

7.1. Therefore, in the light of the above discussion, the petitioners are entitled to succeed and the impugned Circular dated 06-04-2018 is liable to be set aside on the ground of proportionality. Accordingly, the writ petitions are allowed and the Circular dated 06- 04- 2018 is set aside.”

This was an important event in the evolution of Virtual Currencies in India and a reason for my own interest in the concept.

For those who might have followed my work, this is my third article in the NFT – Virtual Assets series. Now let's explore developments from the Reserve Bank of India with respect to virtual currencies and its thirst for the same.

I. Central Bank Digital Currencies:

Recently, the Reserve Bank of India announced that the first pilot in the Digital Rupee - Wholesale segment i.e., the central bank digital currency (CBDC), will commence from November 1, 2022.

In his keynote address on July 22, 2021, Mr. T. Rabi Sankar, Deputy Governor, Reserve Bank of India, spoke about Central Bank Digital Currencies (CBDC). CBDC was defined as “the legal tender issued by a central bank in a digital form. It is the same as a fiat currency and is exchangeable one-to-one with the fiat currency. Only its form is different.”¹

But before we discuss CBDC in detail, let's look at the functions of Reserve Bank of India.

II. Reserve Bank of India (RBI) and CBDC:

RBI, the central bank of India, is a vital organ of the financial ecosystem of India. From their role in issuance of currency to providing to solutions for the effective functioning of the economy, the RBI shoulders great responsibility in the stability and advancement of the economy.

Financial stability and facilitating efficient payments, though has always been among the main objectives of the RBI, the development in technology also pushes the RBI to adapt to such change.

Central Banks across the globe are engaged in exploring CBDCs and a few countries have also introduced proofs of concept / pilots on CBDC. The High Level Inter-Ministerial Committee (November 2017) constituted by Ministry of Finance, Government of India (GoI) to examine the policy and legal framework for regulation of virtual / crypto currencies had recommended the introduction of CBDCs as a digital form of fiat money in India. Like other central banks, RBI has also been exploring the pros and cons of introduction of CBDCs since quite some time.²

A survey conducted by the Bank for International Settlements (BIS) in 2021 revealed that 86% of central banks around the globe were actively researching

¹ https://www.rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1111

² https://www.rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1111

the potential for CBDCs, 60% were experimenting with the technology and 14% were deploying pilot projects.³

The popularity that the Private Virtual Currencies (PVC) enjoys among today's population is not negligible and the RBI has certainly made itself aware of the potential of virtual currencies. And RBI has also queued in to have a taste of it. It is however, the responsibility of the RBI to provide its citizens a risk free experience with virtual currencies.

The RBI had set up an Internal Working Group (WG) in October 2020 to undertake a study on appropriate design/implementation architecture for introducing CBDCs in India. The WG in their February 2021 report, recommended that e₹ (Digital Rupee) be issued as another form of currency while its backed by robust legal framework. The WG was of the view that finalising a model for implementation of e₹ within a short duration may not be desirable and proposed to continue deliberations on CBDC over a longer period to refine and crystallise requirements for the implementation of other models of e₹ in future.⁴

An internal high-level committee on CBDC under the chairmanship of Shri Ajay Kumar Choudhary, Executive Director, RBI was constituted in February 2022 by the Reserve Bank to brainstorm and undertake an extensive study on various aspects of CBDC and based on the deliberations in the Committee, the Reserve Bank released a "Concept Note" in October 2022, to present its findings and recommendations. In the article below, I have set out to discuss the concept note and my take aways from it.

The basic features of CBDC include:

- CBDC is sovereign currency issued by Central Banks in alignment with their monetary policy
- It appears as a liability on the central bank's balance sheet
- Must be accepted as a medium of payment, legal tender, and a safe store of value by all citizens, enterprises, and government agencies.
- Freely convertible against commercial bank money and cash
- Fungible legal tender for which holders need not have a bank account
- Expected to lower the cost of issuance of money and transactions⁵

III. The Need for CBDC:

In the keynote address dated July 22, 2021, the Deputy Governor of RBI stated that, there has been an increased use of digital currency in India and that

³ <https://www.bis.org/about/bisih/topics/cbdc.htm>

⁴ <https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/CONCEPTNOTEACB531172E0B4DFC9A6E506C2C24FFB6.PDF>

⁵ <https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/CONCEPTNOTEACB531172E0B4DFC9A6E506C2C24FFB6.PDF>

preference for cash mostly was restricted to transactions below INR 500. And due to the high currency to GDP ratio in India, CBDC would be beneficial in reducing the cost of printing, transporting, storing and distributing currency. Developing CBDCs backed by the Government, could provide the public with uses that any private VC can provide and also protect the public from the abnormal level of volatility some of these VCs experience.

Further, in the keynote address delivered by Shri T Rabi Sankar, Deputy Governor, Reserve Bank of India, February 14th, 2022, at the Indian Banks Association 17th Annual Banking Technology Conference and Awards⁶, some of the arguments made for regulation of cryptocurrencies in India were recognized, viz:

- a. Blockchain or Distributed Ledger Technology is a promising technology where Indians might have a global edge. Banning cryptocurrencies would affect the absorption of DLT technology in India.
- b. Most major countries are not banning cryptocurrencies but are considering some kind of regulation.
- c. Many Indians have already invested in cryptocurrencies and banning it may lead to wealth loss for them.
- d. Banning in any case is unlikely to be effective because by its very nature cryptocurrencies can be acquired and traded in an anonymous manner.

However, it has also been argued by the RBI that, private virtual currencies sit at substantial odds to the historical concept of money and they have no intrinsic value. It is argued that, the inherent design of cryptocurrencies is more geared to bypass the established and regulated intermediation and control arrangements that play a crucial role of ensuring integrity and stability of monetary and financial eco-system. Therefore, the need for CBDC.

IV. Types of CBDC:

As mentioned above, the RBI announced the pilot of CBDC – Wholesale from November 1, 2022 and more recently, there have been reports that the RBI plans to start a trial run for retail central bank digital currency. As may be evident from above, there are two types of CBDC that the RBI plans to operate – Wholesale and Retail.

a. Wholesale CBDC:

Wholesale CBDC are of the nature that will facilitate interbank settlements on net basis. This helps in making the financial system of the country faster, safer, and economical. They serve the same purpose as reserves held at the central bank but with additional functionality. Wholesale CBDC can also facilitate cross-border transactions between the wholesale CBDC systems of multiple countries, which is achieved by creating a corridor network or 'bridge' with an operator node

⁶ https://rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1196

run jointly by the central banks of the participating countries that issue the depository receipts.⁷

b. **Retail CBDC:**

This category of CBDC is meant for use by ordinary consumers to conduct their daily financial transactions. Retail CBDC is based on distributed ledger technology (DLT), like a private blockchain network handled by the government which helps it to trace transactions while maintaining anonymity. Retail CBDC would be targeted for use by all private sector, non-financial consumers, and businesses. It is basically an electronic version of cash held in hand for our day-to-day retail consumption. CBDC can provide an alternative medium of making digital payments in case of operational and/or technical problems leading to disruption in other payment system infrastructures.

A detailed study of the wholesale and retail types of CBDC, might warrant introduction of both types by the RBI. But how?

V. **Models of Issuance:**

It is first essential to understand that, depending on the model adopted, the whole ecosystem will need various players to function, which includes the RBI, public and private banks, payment service providers (PSPs) and other financial institutions and third-party service or application providers.

The issuance architecture of retail CBDC can be of the following types:

- a. **Single Tier model** – Also known as the Direct CBDC Model, here, the central bank manages the entire CBDC system including issuance and account-keeping. In this model, the central bank server is involved in all payments and the central bank keeps a record of all balances and updates it with every transaction. It provides an advantage of a very resilient system as every transaction is backed by the central bank. It however marginalises involvement of private sector. Though this model might lead to disintermediation, it might also be seen as a disadvantage as the central bank would then have the additional responsibility of managing customers, verifications, AML checks etc.
- b. **Two-Tier Model** – As the name suggests, this model is designed as a two-tier system to combat the disadvantages of the Single Tier model above. In this model, the central bank and other service providers, both play a role to support each other. There are two models under this architecture viz. Indirect model and Hybrid Model.
 - **Indirect Model** - In this model, consumers would hold their CBDC in an account/wallet with a bank, or a service provider. The obligations towards the consumer would be carried out by a service provider or an intermediary, rather

⁷ <https://www.pwc.in/industries/financial-services/fintech/dp/central-bank-digital-currency-in-the-indian-context.html#sources>

than the central bank. The central bank would however monitor the wholesale balances of CBDC of the intermediaries and ensure that they are in line with the retail balances.

- **Hybrid Model** - In the Hybrid model, by definition, the central bank and the intermediaries would have a combined control on the CBDCs. The central bank will issue CBDC to other entities which shall make those entities then responsible for all customer-associated activities. While the intermediaries handle retail payments, the central bank also maintains a central ledger of all transactions and operates a backup technical infrastructure allowing it to restart the payment system if intermediaries run into insolvency or technical outages. Therefore, under this model, though the intermediaries handle transactions, CBDC will be a direct claim on the central bank.

VI. Uses and Benefits of CBDC:

CBDC, by merely being a sovereign currency alone, has higher advantage. Apart from bringing resilience and adding efficiency to the financial ecosystem, other key motivations for CBDC include reduction in operational costs involved in physical cash management, innovation in cross-border payments space and providing public with uses that any private virtual currencies can provide, without the associated risks. CBDC also helps in implementing AML and combatting financial terrorism (CFT) measures by acting as a highly secure way for cross-border transactions.

i. Reduction in cost associated with physical cash management.

India continues to face significant costs on cash management. As per the concept note, the total expenditure incurred on security printing during April 1, 2021 to March 31, 2022 was ₹4,984.80 crore as against ₹4,012.10 crore in the previous year (July 1, 2020 to March 31, 2021). CBDC on the other hand, reduces operational costs. Though establishing a CBDC infrastructure may be expensive, subsequent marginal operating costs shall be very low.

ii. Supporting competition, efficiency and innovation in payments.

The payments systems in the country have been majorly transformed due to the digital revolution. Consumers now have a wide range of options to choose for a payment method. RBI's CBDC would offer the public broad access to digital money free from credit risk and liquidity risk.

iii. Cross border transactions.

As per the World Bank, India is the world's largest recipient of remittances as it received \$87 billion in 2021 with the United States being the biggest source, accounting for over 20 per cent of these funds. Therefore, misuse of informal/illegal channels is a concern.

The G20 has also made enhancing cross-border payments a priority and endorsed a comprehensive programme to address the key challenges to cross

border payment, namely high costs, low speed, limited access and insufficient transparency and frictions that contributed to these challenges. Therefore, addressing of challenges faced in cross-border payment is one of the major motivations for exploring issuance of CBDC.

CBDCs would ensure faster remittances and collaboration among major economies of the world, would facilitate creation of necessary infrastructure for CBDC transfer. An infrastructure that would ensure interoperability could prove useful in reducing time required for such payments.

Though the technical architecture may not be uniform, interoperability can be achieved through a common bridge that is able to standardize the inputs and outputs from different systems in a form that is understandable to every player.

iv. **Support financial inclusion.**

Some of the existing challenges to financial inclusion include limited physical infrastructure - especially in remote areas, poor connectivity, non-availability of customized products, etc. CBDC may provide the public a safe sovereign digital money for meeting various transaction needs. It shall make financial services more accessible. With offline functionality as an option, it will enable transactions even without the internet, which translates to better access in regions with poor internet connectivity.

v. **Safeguard the trust of the common man in the national currency vis-à-vis proliferation of crypto assets.**

Crypto-assets are considered to be a threat as it may lead to creation of a parallel economy and will likely undermine the monetary policy transmission and stability of the domestic currency. RBI's CBDC on the other hand could provide risk free experiences for virtual currency users.

vi. **Retail payments.**

Retail payments are a significant motivation for CBDC. Payments between consumers and business can be smoother and faster with effective implementation of CBDC and the architecture required.

vii. **MSME lending.**

Lending to micro, small and medium enterprises (MSMEs) in India can be faster and instant, with CBDC. It can help businesses grow and survive when availability of cash is limited.

viii. **Programmability.**

An interesting application of CBDC is its programmability. Which in simple terms would mean, the money can be programmed to its end use. Certain currencies could be programmed to be used for a specific purpose. An example cited in the concept note is that an agriculture credit can be programmed to be usable only at input store credits.

Apart from the above, CBDC also pose some risks. Below are some of the possible implications and other considerations that have to be addressed before the issuance of CBDCs to public.

VII. Implications and Considerations:

It is essential for an economy to consider the below and sufficiently address them, based on their monetary policies and objectives, before issuing CBDC to its public. BIS has drawn importance to the three important foundational principles for central banks to consider in issuing a CBDC:

- a) It should not interfere with public policy objectives or prevent banks from performing their monetary stability mandate (a “do no harm” principle).
- b) It should be used alongside and complement existing forms of money (the coexistence principle).
- c) It should promote innovation and competition to increase the overall efficiency and accessibility of the payment system (the innovation and efficiency principle).

Apart from the above, the following concerns cannot be ignored as well.

i. CBDCs to be account-based or token-based?

A token based CBDC is the digital equivalent of a banknote. A token CBDC is a “bearer-instrument”. Whoever holds them would own them. 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. As regards verification, 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.

ii. Anonymity.

Physical currency represents anonymity, universality and finality. However, ensuring anonymity for a digital currency is a challenge as they leave a trail. The degree of anonymity is key. Central banks around the world have expressed concern over fully anonymous CBDC which paves way for illegal transactions. The European Central Bank experimented an intermediate degree of anonymity by allotting some anonymous vouchers that could be used for small transactions and larger transactions were still monitored.

iii. Fixed Denomination v. Minimum Value based CBDC.

Another point of concern is whether a token maybe issued with minimum value or fixed denominations. While minimum value tokens might result in higher volume transaction, fixed denominations on the other hand would help build the

same level of trust that people have in the physical currency of the same denominations.

iv. **Technology.**

The platform should ideally have the following features:

- Highly scalable to support very high volume and rate of transactions without performance degradation.
- Robust to ensure stability of financial ecosystem
- Tamper-proof access control protocols and Cryptography for safety of data, both CBDC and transactional data
- Cross platform support, to allow development of large variety of client applications using CBDC for financial services
- Ability to integrate with other IT platforms in the financial ecosystem must be at the core of platform design
- Configurable workflows for quick implementation of policy level directives issued by RBI from time to time
- Comprehensive administration, reporting, and data analytics utilities
- Highly evolved fraud monitoring framework to prevent occurrence of financial frauds

v. **Recoverability**

In case of token based models, where mere possession of the token proves ownership, it is essential to consider the consequence in case of loss.

- **Custodian model** – Service provider shall be responsible for managing the wallet. In case of a loss, the wallet shall be recovered by using the wallet address, pin etc. The security of the wallet shall depend on the technology of the service provider.
- **User held model** – The responsibility of safeguarding and managing the keys is that of the user and the device. The wallet is not recoverable in case of a loss of the device.

vi. **Offline functionality.**

Access to internet is still not achieved in some areas and the people in select regions would not be able to use CBDC merely due to lack of connectivity. To combat this hindrance, it is vital for offline capabilities to be incorporated.

vii. **Business Continuity Planning.**

CBDCs carry the sovereign guarantee, therefore, it is more than vital that the Business Continuity Planning of CBDC would need to be of the highest standard. Business continuity infrastructure and planning would have to be in place and implemented at the central bank as well as all other players in the ecosystem.

viii. **Consumer protection.**

The very concept of a digital currency can only be as effective as its consumer protection and grievance handling mechanisms. Some risks associated with CBDC are:

- **Privacy** - While combatting AML and having CFT mechanisms in place, the CMDC platform and the authorities need to be conscious of protecting the users' privacy.
- **Security and technology risks** - The importance of security in a concept such as CBDC cannot be overstated. Also, while most of the technology underlying it may be beyond understanding for an average consumer, regular and appropriate technical audit is necessary.
- **Accountability** - The identification of who is accountable to consumers in case of loss is crucial and a core issue in respect of the consumer protections associated risk.

VIII. Conclusion:

Several central banks across the world are still in conceptual or pilot stages. While RBI has taken stock of the potential of virtual currencies and is now in pilot stages, the reality of CBDC is still tests and consultations away. Though the CBDC has promising benefits and uses, the risks that come with it is of significance and requires thorough study and implementation of effective architecture that not only meets the requirements but also is adaptable to innovations.

In cash driven economies, the attractiveness of an alternate to cash, can not be shallow or superficial. Though the Concept Note provides enough depth of details in and around CBDC, as consumers we can only hope and wait to tell if the real CBDCs have the same bling as physical money.

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